INTERIM
RESOURCE MANAGEMENT PLAN

2000/2001

Cariboo Forest Region

September 30, 1999

Regional Manager Ministry of Forests, Cariboo Forest Region	Regional Director Ministry of Environment, Lands and Parks, Cariboo Region

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"Strategy at a Glance"

Overview	The Resource Management Plan addresses land-based activities from the perspective of biological needs and forest resource management priorities. The plan forms a compendium of priorities determined by MOF, MELP, major licensees, woodlot licensees and other stakeholders. The RMP is designed to provide guidance to Forest Renewal BC and other agencies to determine the best activities for investments, regardless of the funding source or the agency actually completing the work.
General Strategy	Activity-based information is covered in five strategic objective reports (Appendices C to G). The Resource Management Plan for the Cariboo Forest Region examines land-based resource needs and priorities in terms of: • Commitments, recommendations and links to other land and resource management plans. • The long-term resource implications of current investments. • The value, risks and benefits of the various activities and treatments. • The necessary timelines to meet defined resource management objectives. • Delivery recommendations, viable options and consequences of not carrying out the activity. • Consistency within programs and between delivery centres. • Providing resource investment recommendations consistent with FRBC investment principles and ground rules.
Sustainable Harvest	The *Sustainable Harvest* component contains resource priorities for backlog reforestation, site restoration, stand tending, forest health maintenance and enhancement, and current fire and pest funding opportunities. Separate reports are attached for the Quesnel, Williams Lake and 100 Mile House TSA's.
Strengthening Sustainable Forest Management	The *Strengthening Sustainable Forest Management* strategic objective focuses on providing new information and better tools to improve existing strategic level decision-making processes and support the ongoing development and adoption of innovative approaches for using knowledge strategically.
Enhancing Environmental Values	*Enhancing Environmental Values* addresses the restoration and protection of fish habitat and domestic water supplies in priority watersheds that have been damaged or are threatened by forest development prior to the Forest Practices Code. *Enhancing Environmental Values* covers all aspects of watershed restoration, such as upslope, riparian and stream work required to restore or protect fish habitat and water supplies.
Summary	*Small summary table for the TSA??*

1.0 Identification of Resource Activities

1.1 Introduction

The 2000/2001 Resource Management Plan (RMP) for the Cariboo Forest Region was developed through a cooperative process between representatives from the Ministry of Forests (MOF), Ministry of Environment, Lands and Parks (MELP), Forest Renewal BC (FRBC), forest industry major licensees, woodlot licensees and other. Consultant support helped to collate information and data. A list of participants is provided in Appendix A.

Meetings relating to each of the three RMP strategic objectives were held from July to September, 1999 to review the RMP framework and corresponding component guidelines, and list and prioritize related treatments and activities. Meeting summaries are included in Appendix H. Information for each strategic objective is provided in the corresponding reports in the RMP appendices. These reports form the foundation of the RMP.

The RMP ground rules, included in Appendix B, were developed for the Cariboo region by MOF, MELP and FRBC representatives. These ground rules localized the provincial guidelines on eligible activities, key targets, performance measures, investment levels and budgets, and technical consultation for identifying FRBC investment priorities and developing a list of recommended resource management activities (MOF/MELP, 1999). Highlights include the multi-agency planning approach, use of strategic objective reports for setting FRBC investment priorities (where appropriate), and timelines for the 2000/2001 RMP process.

1.2 Purpose

The purposes of the resource management plans are (MOF/MELP, 1999):

- Identify MOF and MELP resource management objectives and priorities.
- Recommend investment priorities, in support of FRBC strategic objectives, eligible for investment funding.
- Identify funding requirements for the ministries' objectives and resource priorities eligible for non-FRBC funding sources.

1.3 Process and Procedures

The three strategic objective reports were created differently depending on prior work in hand at the onset of the RMP. Each process is briefly described below.

1.3.1 Sustainable Harvest

Through earlier work for each Timber Supply Area by a Timber Investment Strategy Committee (TISC), an extensive analysis of stand treatments on timber supply had been undertaken using a 250-year planning horizon. The TISC analysis provided the base information for the sustainable harvest component, and the RMP meetings built on this knowledge to list relevant activities and treatments for offsetting projected timber supply shortfalls, where necessary, or enhancing long-term timber supply.

1.3.2 Strengthening Sustainable Forest Management

Knowledge gaps to aid in the implementation of the Cariboo-Chilcotin Land Use Plan (CCLUP) and improve the Timber Supply Review (TSR3) process in the Cariboo Forest Region were identified during a series of meetings of agency (MOF, MELP) staff and forest industry (major licensee) representatives. The issues, gaps and needs were reviewed and discussed during another series of meetings of agencies and stakeholders. The discussions ensured that activities/projects were identified to fill the gaps and that duplication was avoided. Activities were prioritized and ranked according to their importance to either strategic land use planning or timber supply review.

1.3.3 Enhancing Environmental Values

Key watersheds (buckets) with high fish values and domestic water supply have been identified in this process. In addition, high priority fisheries buckets were included to satisfy the requirements of the CCLUP. A committee was established to rank these priority buckets based on MELP fisheries values, MELP domestic water supply, DFO fisheries values (salmon) and MOF stream sedimentation potential.

1.4 Overview of Timber Supply and Other Resource Management Issues

The most significant timber supply issue in the Cariboo Forest Region is the 30% drop in timber supply in the Williams Lake TSA in the next 50 years. Several processes and practices underway (site index adjustments, genetically improved seedlings and harvesting problem forest types that will become managed forests) are expected to alleviate this shortfall. As well, commercial thinning is anticipated to provide an additional option to maintain a more even flow of timber. The Quesnel and 100 Mile House TSA's have a more sustainable timber supply that can be enhanced in the long term by the treatments and activities listed in those reports.

Other resource management issues are:

The Cariboo-Chilcotin Land Use Plan (CCLUP) has identified the Horsefly River watershed as the number one priority for watershed assessment and restoration along with the Cottonwood/ Swift, Bonaparte and Cariboo Rivers as high priority. In addition to the CCLUP rankings, the Bridge Creek watershed is also ranked as a high priority.

The implementation the CCLUP requires the collection of information to address the resources strategies/objectives/targets identified in the CCLUP and the CCLUP integration report. In-depth GIS analysis is needed to ensure integration of CCLUP targets in sub-regional planning.

The next round of Timber Supply Reviews (TSR3) will model the impact of strategic land use plans (CCLUP and Sub-Regional Plans) as well as Forest Practices Code impacts.

A number of items of regional significance impact the amount of operable land base and serve as constraining factors in timber supply analysis, such as wildlife tree patches, riparian management, mule deer winter ranges, visuals preservation of open range and biodiversity.

Significant gains in harvest levels in short, mid and long terms can be achieved through better knowledge of growth rates.

Forest inventories are from 4 – 33 years old in the Cariboo Forest Region, and for other resources are incomplete or, in some cases, totally absent.

More detailed information is provided in the associated strategic objective reports.

1.5 Issues Identified through the Timber Supply Review and Other Planning Processes

The main management issues identified through the second Timber Supply Review (TSR2) and other planning processes are:

- Cariboo-Chilcotin Land Use Plan
- Landscape-level biodiversity
- Stand-level biodiversity
- Pulpwood Agreement #16 timber supply
- Problem Forest Types
- Mountain pine beetle salvage harvesting
- Inventory audit
- Old Growth Site Index
- Lignum Innovative Forest Practices Agreement
- Anahim Round Table consensus document
- Goal 2 protected area candidates
- Visually sensitive areas
- Wildlife habitat
- Riparian habitat
- Green-up
- Community dependence

These issues are described more fully in the strategic objective reports.

1.6 Addressing Issues

1.7 Summary Tables

2.0 Technical Consultation

Joint MOF/MELP/industry meetings were held from late June to early September,1999. Participants are listed in Appendix A. Appendix H, Technical Consultation Report, contains the summaries of all meetings.

4.0 Resource Management Plan Appendices

Appendix A Resource Management Plan Participants

Strategic Objective	TSA	Name	Agency
Sustainable Harvest	All	Guy Newsome*, Ray Leduc*	MOF, Cariboo region
		Stan Gripich	Forest Renewal BC
		Brian Chapman*, Clinton Webb*, Troy Larden	MELP, Cariboo region
		Jane Perry*	Consultant
	Quesnel	Mike Pelchat*	MOF, Quesnel district
		Al Hunter	West Fraser
		Gerry Powell	Weldwood
		Charles von Hahn	Slocan
		Grant Glessing	Tolko
		Rob Cochrane, Roland Jarrett	West Fraser
		Bill Layton	Woodlot Association
	Williams Lake	Kim Peel	Lignum
		Bev Frittenburg	MOF, Chilcotin district
		Bev Atkins	UBC Alex Fraser Research Forest
		Cindy Gibson-Robertson	MOF, Williams Lake district
		Gerry Mooney	MOF, Horsefly district
		Art Lacourciere	Weldwood
		Guy Burdikin	West Fraser
		Tim Harding	Riverside Forest Products
		??	West Chilcotin Forest Products
		Brian McNaughton	Woodlot Association
	100 Mile House	Dawn State*, Ken Blom	MOF, district
		Wayne Nuyens	Ainsworth
		Al Hicks, Val Duffin	Weldwood
		Kim Peel	Lignum
		Paul Christensen	Ainsworth, Savona
		Bill Hadden	Woodlot Association
Strengthening Sustainable Forest Management	All	Ray Leduc, Eric Johansen, Harry Jennings, Guy Newsome, Lyle Resh	MOF, Cariboo region
		Stan Gripich	Forest Renewal BC
		Charles von Hahn	Slocan, Quesnel
		Al Hunter	West Fraser, Quesnel
		Brian Chapman*, Doug Krogel, Rodger Stewart	MELP, Cariboo region
		Mircea Rau	UBC Alex Fraser Research Forest
		Karen Campbell	Weldwood, Williams Lake
		Al Hicks	Weldwood, 100 Mile House
		Dave Conly, Tracey Earle	Lignum
		Heather Knezevich	MOF, Cariboo region
		Rick Wheeler	Riverside Forest Products
		Peter Andrews	Weldwood, Quesnel
		Frank Miklas	MOF, Chilcotin district
		Mike Lloyd	MOF, Horsefly district
		Mike Cleaver	MOF, 100 Mile House district
Enhancing Environmental Values	All	Brian Chapman*	MELP, Cariboo region
		Stan Gripich, Ken Gilbert	Forest Renewal BC
		Muhammed Sabur*, Bruce McFarlane	MOF, Cariboo region
		Ray Jungaro	MOF, Quesnel district
		Jamie Moe	MOF, Horsefly district
		Peter Baggs	MOF, 100 Mile House district
		Don Lawrence, Bruce Hillaby	Dep't of Fisheries and Oceans
		Gerry Powell	Weldwood, Quesnel
		Al Hunter	West Fraser, Quesnel
		Paul Hutchinson	Ainsworth
		Ken Blom, Peter Baggs	MOF, 100 Mile House district
		Roger Packham	MELP, 100 Mile House district
		Kim Peel, Ron ??	Lignum
		Rick Wheeler	Riverside Forest Products
		Bert ??	West Chilcotin Forest Products

* Also co-authored Resource Management Plan.

Appendix B Local Ground Rules

RMP DEVELOPMENT GROUNDRULES
Cariboo Chilcotin Region
1999/2000

1) As agreed to in the Service Agreement between Forest Renewal BC, the Ministry of Environment, Lands, and Parks, and the Ministry of Forests, and under the guidance of the provincial RMP framework, Ministries will develop Resource Management Plans (RMP) by Strategic Objective, at the TSA level. The ministries will roll up the TSA level RMPs to one Regional Level Plan. Copies of the plans and a list of recommended eligible activities will be made available on computer disc, to the regional office of Forest Renewal.
The Ministries will develop the plans following the "Resource Planning Framework, Guidelines for the Development of Resource Management Plans for 2000/01". (copy attached as attachment #1)

2) Ministries will provide an RMP format, suitable for workload planning, for each of the Strategic Objective Plans, by planning unit, or TSA. This reporting format will be available for review, by August 1. A format for the Regional Report will be delivered to the Ministries by July 15.

3) Forest Renewal will supply Tentative Investment Budgets, and Local Targets, by Strategic Objective. Ministries in consultation with stakeholders will use this information to identify Local Performance Measures. (TSA Objectives)

4)In developing the RMPs, the Ministries will consult with all directly relevant stakeholders, including but not limited to the following ones.
- -MYA holders and AA holders
- -Woodlot Associations
- -UBC representatives
- -IFPA/EFMPP holders

5) Ministries will report on all RMP development meetings to FRBC, and will give advance notice in order to allow FRBC time to plan to attend the larger meetings.
Reporting Format:
- -Small Meetings
  - -Date
  - -Who attended
  - -What was discussed
  - -Outcome or Resolution
  - -Signed by Ministry Official on site

- Large Meetings
    - Date
    - List of attendees
    - Agenda
    - Outcome
    - Ministry Official signs

6) As part of the development of the final RMP, Forest Renewal will consult with other interested partners and stakeholders, to explain the planning process, and to gather employment and economic needs, partnership opportunities, and Jobs and Timber implications. The Ministries will participate in this consultation process as necessary to fulfill the fiduciary responsibility mentioned in the service agreements. (Sec. 3.4 (d))

7) Tentative timelines for the development of the RMP:

-Ministry sub-regional information meeting	June 21
-Regional Information Meeting (with stakeholders)	June 24
-Ministry/Stakeholder Technical Development meetings	June 25-Aug 13
-Draft RMP available for review	Aug 16
-FRBC/Stakeholder review of Draft RMP	Aug 17-Sept 30
-Final RMP	Sept 30
-Planning Unit Meetings to develop RIP	Sept 30-Oct 20

Signed by:

Regional Director MELP

Regional Manager MoF

Director FRBC

APPENDIX C: SUSTAINABLE HARVEST REPORT
QUESNEL TSA

INTERIM

RESOURCE MANAGEMENT PLAN

2000/2001

SUSTAINABLE HARVEST

Quesnel TSA

September 30, 1999

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"Strategy at a Glance"

General Strategy	• Maximize productivity of forest land base. • Reduce impact of transition to Long Term Harvest Level. • Improve timber quality. • Maintain or enhance biodiversity indicators.
Working Targets	• Give priority to those forest management activities under pinning the Timber Supply Analysis base case. • Reduce the impact of the transition to the long-term harvest level. • Increase the mid- and long-term harvest levels. • Improve timber quality in the mid- and long-term.
Product Objectives	• Minimum piece size specifications. • Enhanced veneer and clear wood sources.
Major Silviculture Strategies	**Timber Quantity** • Density management, improved site occupancy, use of genetically improved seedlings and fertilization to increase mid- and long-term harvest levels. • Incremental planting and fertilization to reduce impact of transition to Long Term Harvest Level. **Timber Quality** • Density management (planting, spacing) to ensure adequate piece size; • Pruning of higher site index sites to produce clear wood for veneer and value added processing facilities.
Habitat Supply Strategy	• Maintain representative ecosystem elements that sustain habitat supply, including structural character (horizontal and vertical heterogeneity) and natural species composition. • Maintain these elements across seral stages and ecosystems by ensuring that all incremental silviculture activities are consistent with standards to maintain or enhance habitat supply. • Mitigate negative impacts to natural species composition and structural complexity attributes.

1.0 Basic Data

The Quesnel Timber Supply Area (TSA) is the most northern TSA in the Cariboo Forest Region, located in the central interior of British Columbia. The TSA's climate varies from generally dry and cold in the west, due to the rainshadow influence of the Coast Mountains and Itcha-Ilgachuz Range, to milder and wetter towards the east where airflow rises over the Quesnel Highland. The Fraser River valley through the middle of the area is dry and warm. The area has a diverse range of ecosystems with extensive wetlands and waterbodies and rolling topography intersected by major valleys.

From the city of Quesnel, the TSA stretches west past the community of Nazko to Eliguk Lake northwest of the Itcha-Ilgachuz Range, and east past Wells and Barkerville to the Bowron Lakes Provincial Park. The area also encompasses nine First Nations communities. The TSA covers 1.65 million ha with approximately 81% as productive Crown forest (Pedersen, 1996). Deductions to the productive forest land base, primarily due to problem forest types, habitat exclusions and environmentally sensitive areas, bring the current harvesting landbase to 1.02 million ha, or 62% of the total landbase (Quesnel TSA Timber Supply Analysis, 1994).

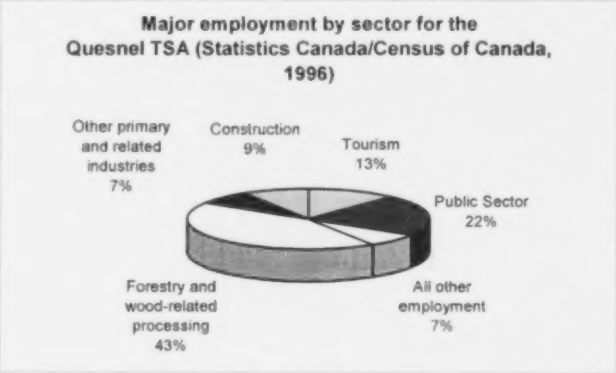

Figure 1. Major Employment by Sector for the Quesnel TSA.

The allowable annual cut (AAC) was affected by outbreaks of mountain pine beetle in the early 1980's, requiring beetle control and salvage harvesting, as well as the operability of problem forest types and deciduous forest types. The current AAC of 2,340,000 m^3, set on November 9, 1995, is comprised of four components:

- Coniferous stands in the main TSA (1,965,500 m^3);
- Problem forest types (300,000 m^3);
- Deciduous volume partition (40,000 m^3); and
- Woodlots (34,500 m^3);

The second Timber Supply Review (TSR2) is receiving public input from the June 1999 Information Report (BC Ministry of Forests, 1999b). The timber supply analysis will be available for public review in spring 2000 followed by the chief forester's revised AAC determination.

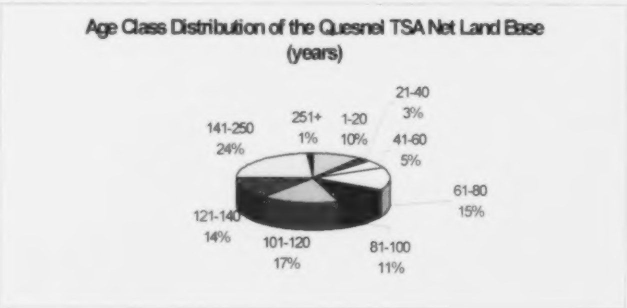

Figure 2. Age class Distribution of the Quesnel TSA Net Land Base.

Two timber flow alternatives were used to evaluate stand treatments in the *TISC Cariboo Region Stand Treatments Analysis, Quesnel TSA* (Timberline, 1998). An even-flow base case facilitated comparisons between various silviculture treatments, while the uneven-flow base case was more indicative of realistic harvest flow requirements. Using only natural stand yields, the even-flow analysis identified a minimum long-term harvest level similar to TSR1. Using managed stand yields increased the timber supply to 2,723,100 m^3, an increase of 20% over the current AAC. The uneven-flow analysis recognized the current age class structure and the abundance of existing mature timber by maximizing the initial harvest level and limiting reductions to 10% per decade while trending towards a stable long-term harvest level (Timberline, 1998). The harvest levels for the uneven-flow analysis are displayed below:

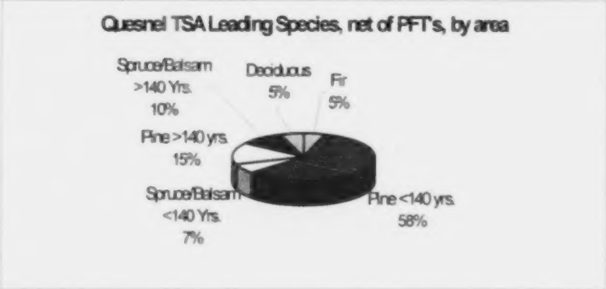

Figure 3. Species Distribution, Excluding Problem Forest Types, for the Quesnel TSA by Area.

Decade	Total Annual Harvest (m^3) (Uneven Flow)
1	3,902,400
2	3,548,610
3	3,230,199
4	2.943,629
5	2,723,100
6	2,723,100
7	2,723,100
8	2,723,100
9	2,723,100
10-25	2,723,100

Table 1. Base case Annual Harvest Levels for the Quesnel TSA (Timberline, 1998).

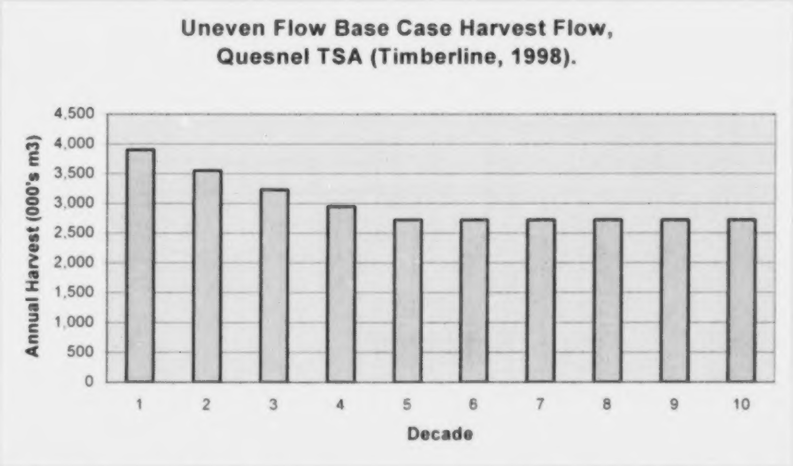

Figure 4. Uneven Flow Base Case Harvest Levels for the Quesnel TSA (Timberline, 1998).

2.0 Issues Affecting Timber Supply

The following issues affect timber supply from the perspectives of timber quality and quantity, forest health and habitat supply. They are summarized from the TSR1 AAC rationale (Pedersen, 1996) and the TSR2 data package for the Quesnel TSA (BC Ministry of Forests, 1999b) with additional input from Ministry of Environment, Lands and Parks (MELP) staff.

Issue	Comments
Cariboo-Chilcotin Land Use Plan	The Cariboo-Chilcotin Land Use Plan (CCLUP) was announced by government in October, 1994 and adopted by Cabinet as a Higher Level Plan with later amendment effective July 31, 1999. Management prescriptions contained in the CCLUP strategy reports have been modified by the Integration Report and are considered key information sources in Forest Development Plan direction. The TSR2 process relies on CCLUP information for the modeling of some prescriptions or constraints, which will affect long-term timber supply considerations in the RMP.
Landscape-level biodiversity	Landscape level biodiversity direction provided by the 1998 statutory decision maker letter reflects current practices, and will be used in developing the base case for TSR2. Practices are to be consistent with the *CCLUP Biodiversity Conservation Strategy* as influenced by the *CCLUP Integration Report* and the *Cariboo Region Landscape Unit Planning Strategy*.
Stand-level biodiversity	Wildlife tree patches are planned to reduce impact on the productive forest areas as much as possible.
Pulp Wood Agreement (PA) #5	No harvesting is anticipated for PA #5 in the near future.
Problem Forest Types	TSR1 included a partition of 300,000 m^3/year for problem forest types (PFT's). Forest cover information was adjusted based on the results of an inventory study conducted in 1997. The inventory information was developed to allow a separate assessment of the PFT's for TSR2.
Mountain pine beetle salvage harvesting	Recent increases in salvage requirements may affect short-term harvest levels and longer-term timber supply. A workshop is included in the Strengthening Sustainable Forest Management strategic objective report to bring together experts and resource managers to explore alternative approaches for managing for timber and non-timber values in ecosystems susceptible to mountain pine beetle.
Old Growth Site Index/Site productivity	Current research shows that the site indices for stands older than 140 years are below actual productivity. Until regional information is available, the provincial site index adjustments will be applied as a sensitivity analysis in TSR2.
Goal 2 protected area candidates	These areas are still proposed and will be relocated through sub-regional planning. Goal 2 areas are not incorporated into the base case for TSR2. These areas amount to 0.25% of the timber harvesting landbase of the total CCLUP area, but their locations are unclear as well as how much of the TSA will be designated as protected areas. TSR2 will determine the potential impact on timber supply through a sensitivity analysis.
Deciduous component in the timber supply	A portion of the TSA was re inventoried in 1997. This information will improve the assessment of the deciduous component in TSR2.
Not satisfactorily restocked (NSR) areas	There are currently 4698 hectares of backlog NSR and 18,328 hectares of current NSR area. TSR2 will model the restocking of current NSR within the regeneration delay, and the backlog NSR within 10 years.
Species conversion	TSR1 raised species conversion as an issue requiring further assessment. Inability to link original forest cover information to current forest cover frustrated the analysis, but species conversion is not considered a major problem for TSR2. Fill and incremental planting treatments should consider this issue.
Cariboo River Management Area	No more than 15% of the productive forest area may be below the green-up height to ensure sufficient moose habitat is maintained.

Issue	Comments
Wildlife habitat	Current caribou habitat management direction permits harvesting in 35% of the previously deferred area, but confirmation will depend on results of research underway on partial cuts to maintain terrestrial lichens. Eastern caribou habitat is restricted from harvesting, pending the results of ongoing research on group selection systems to maintain arboreal lichens and the implementation of the caribou strategy. The mule deer winter range strategy for harvesting in the IDF allows for no harvesting on some ranges, with limited selection harvesting and extended rotations on others. Exceptions are allowed to address mountain pine beetle salvage. Clumpy spacing is recommended in Douglas-fir – leading immature stands where enhanced forestry activities are proposed. For grizzly bear, moose, furbearer, species at risk, implementation strategies for CCLUP requirements to manage for these species' habitat are being developed on an ongoing basis; for enhanced forestry activities, standards for maintaining habitat supply will include considerations for these species.
Riparian habitat	The inclusion of riparian reserves and management zones may reduce the productive forest land area with potential impact on the availability of mature volume for harvesting.
Green-up	The current minimum height requirement of 3 m to achieve green-up currently equates to an age of 17 – 22 years. Spruce stands may not be achieving that prediction. OGSI may calculate stands reaching 3 m in less time. The effects on long-term timber availability are included as a high priority study in the Sustainable Harvest strategic objective.
Community dependence	As shown on page 1 under Basic Data, over 1/3rd of total employment in the TSA relies directly on the forest industry. Public input is most prominent on this socio-economic issue. Future Timber Supply Reviews and AAC determinations will need to balance timber availability with community dependence and opportunities for development of alternate economic bases.

3.0 Incremental Silviculture History

The incremental silviculture program began in the Cariboo region in the late 1970's with juvenile spacing in spruce-balsam stands near Wells. Throughout the Cariboo region, various federal and provincial employment programs (EBAP, FWAP, etc.) through the 1980's provided funds to train people in juvenile spacing while accomplishing significant numbers of treated area. Much of this early work in the Quesnel TSA was conducted in wildfire-origin lodgepole pine stands in the central part of the TSA. Monitoring of treatment results helped refine target densities and understand the interactions of incremental silviculture treatments and forest health.

The initiation of the first federal-provincial FRDA (Forest Resource Development Agreement) in 1985 expanded the incremental silviculture program, and legislative changes in 1987 diverted some juvenile spacing treatments into basic silviculture requirements. FRDA I helped establish regional conifer release, fertilization and pruning programs to add to continued juvenile spacing, with some spacing and limited pruning of transition and wetbelt stands also underway in the TSA. FRDA II continued these trends, followed by the establishment of Forest Renewal BC in 1995, which brought socio-economic considerations to incremental silviculture programs and treatments.

Treatment	10-year average area treated/year (ha)	Treatment Cost (per ha)	
		Average	Range
Juvenile spacing	2580	$525	$300-$800
Fertilization	247	$250	$100-$4501
Pruning	67	$1140	$570-$1300

Table 2. Summary of Incremental Silviculture Area Treated and Costs for the Quesnel TSA (ISIS data).

Incremental silviculture in the Quesnel TSA has been undertaken to capture various benefits of juvenile spacing, including increased merchantable volume at rotation, larger and higher-valued piece size and reduced processing costs.

The TSR2 timber supply analysis uses a regeneration delay of two years for planted areas and four years for naturally regenerated areas under basic silviculture; poor site pine and Douglas-fir areas have regeneration delays of five and seven years, respectively. Management practices that exceed this minimum requirement will undergo sensitivity analysis to identify any improvement to the timber supply forecast. TSR2 does not base the timber supply on any incremental silviculture treatments.

4.0 Opportunities to Increase Timber Supply

The Cariboo Forest Region has undertaken extensive review and analysis of its long-term timber supply for the Williams Lake, Quesnel and 100 Mile House TSA's. Inter-agency committees of Ministry of Forests (MOF), industry and MELP staff worked under the Timber Investment Strategy Committee (TISC) initiative from 1996 to early 1999 (CLMA, 1997; Cariboo Forest Region TISC, 1996, 1997; Timberline, 1998). The TISC reports provide the most reliable framework currently available for the Sustainable Harvest component of the Resource Management Plan.

The *Stand Treatments Analysis* report for the Quesnel TSA (Timberline, 1999) outlines the methodology used in the timber supply analysis. FSSIM 3.0, a forest-level simulation model, predicted the development of a forest over a 250-year planning horizon based on initial forest conditions, expected patterns of growth, harvesting and regeneration rules, and assumptions for non-timber resources. A list of the analysis options, with a brief description of each and its effect on timber supply follows to demonstrate the breadth of scenarios tested and examined.

Analysis Option	Description	Effect on Timber Supply
Base Case	The management assumptions, land base net downs, general growth and yield parameters and forest cover requirements from TSR1 were used, with some minor changes to the development of analysis units to better reflect anticipated TSR2.	The indicated current harvest level of 2,340,000 m^3/year for the main TSA is sustainable over an even flow planning horizon, and could increase up to 20% by using managed stand yields. The uneven flow analysis resulted in a short term harvest of 3,902,000 m^3/year, dropping over 4 decades to a long-term harvest level of 2,723,100 m^3/year, which can be sustained through the entire 250-year planning horizon.
Old Growth Site Index adjustments	OGSI adjustment equations, including SIBEC, were used to more accurately assess productivity of stands older than 140 years.	Produces a long-term harvest gain of 12% for the even flow scenario, and 10% short-term and 5% long-term gains for the uneven flow scenario.
Reduced Regeneration Delay	The regeneration delay for all current and backlog NSR was reduced by 2 years.	Reducing regeneration delay for all current NSR improves the mid- and long-term gains by 3%.
Problem Forest Type Rehabilitation	Limits to area harvested were removed to determine the impact of the transition from PFT to managed stands. All stands were assumed to regenerate to lodgepole pine.	Produces a 3% gain in the even flow scenario, and a 5% gain in the short term in the uneven flow scenario.
Genetically Improved Planting Stock	Site index was adjusted by 3%, 5% and 7% to represent a range of expected responses to tree improvement gains by using genetically improved lodgepole pine and white spruce.	Produces a 5% to 7% gain under the even flow scenario, a 10% to 15% short-term gain and a long-term volume gain of up to 4% above base case for the uneven flow scenario.
Density Management	Spacing to three densities: 1200, 2400 and 3600 stems per hectare.	Produces a 3% to 7% gain in the even flow scenario and a short-term gain of 5% - 14% under the uneven aged flow scenario.
Reducing Lost Productive Area from Future Roads	Reduction of current and future lost productive area to roads and landings by 50%.	Produces a 3% gain in the even flow analysis, and a 9% gain in the short term for the uneven flow analysis.
Fertilization and Spacing	Volume of all eligible lodgepole pine managed stands was increased by 15 and 40 m^3/ha at rotation to reflect gains from one and two fertilization treatments, respectively.	Even flow gain of 8% and 10%, and uneven flow short term gain of 5% and 10% for the combined treatments.
Elimination of Backlog NSR	The base case scenario of 10 years to eliminate all backlog NSR (areas harvested before 1987) was reduced to 0 years.	Regenerating all backlog NSR immediately produces a 2% gain for the even flow scenario, and a 4% short-term gain for the uneven flow scenario.
Commercial Thinning	One-pass volume removal of 30% from 40 – 60 year old natural and managed Douglas-fir and lodgepole pine stands on good and medium sites. In this analysis, spacing to 2400 stems per hectare was used as the base case. Final harvests were delayed for a minimum of 20 years after thinning.	Marginal gains are realized under the even flow scenario. A short-term gain of 5% is achieved under the uneven flow scenario.
Combination of Commercial Thinning and Fertilization	The same commercial thinning methodology is modeled as above with fertilization responses of 15 and 40 m^3/ha for one and two applications.	One and two fertilizer applications produced gains of 2% and 3%, respectively, under the even aged analysis, and 7% and 10%, respectively, under uneven flow.

4.1 Potential Treatments and Treatable Area Information

The *Stand Treatments Analysis* report for the Quesnel TSA (Timberline, 1998) lists the changes in harvest level compared to the base case for all tested treatments and treatment regimes for the TSA. Two timber flow alternatives were used to evaluate stand treatments – even flow and uneven flow. In all phases of the analysis, the harvest flow objectives were to:

- begin at as high a harvest level as possible;
- sustain the initial harvest level for as long as possible;
- achieve short and mid-term harvest levels that do not drop below a minimum long-term sustainable level;
- raise the long run sustainable harvest levels to reflect managed stand yields; and
- limit shifts in harvest to less than 10% per decade.

The following table is extracted from the report.

Table 3. All Analysis Results, Quesnel TSA (Timberline, 1998).

	EVEN FLOW		UNEVEN FLOW			
			SHORT TERM		LONG TERM	
Scenario	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change from base case
Base Case	2723	n/a	3902	n/a	2723	n/a
OGSI Adjustments	3006	12%	4256	10%	2841	5%
Reduced Time to Regenerate Backlog NSR	2770	2%	4044	4%	2723	0%
Reduced Regeneration Delay by 2 years	2794	3%	4079	5%	2723	0%
Genetically Improved Stock; Low (3%)	2841	5%	4256	10%	2723	0%
Genetically Improved Stock; Moderate (5%)	2888	7%	4433	15%	2723	0%
Genetically Improved Stock; High (7%)	2935	9%	4433	15%	2817	4%
Density Management; 3600sph	2794	3%	4079	5%	2723	0%
Density Management; 2400sph	2888	7%	4398	14%	2723	0%
Density Management; 1200sph	2865	6%	4256	10%	2723	0%
Fertilization; redefined Base Case	2888	n/a	4398	n/a	2723	n/a
One Application; 15 m^3/ha increase	2912	8%	4433	5%	2723	0%
Two Applications; 40 m^3/ha increase	2959	10%	4610	10%	2723	0%
PFT Rehabilitation	2794	3%	4079	5%	2723	0%
Rehabilitate 50% of Roads and Landings	2794	3%	4221	9%	2723	0%
Commercial Thinning; redefined Base Case	2888	n/a	4398	n/a	2723	n/a
Commercial Thinning	2912	1%	4610	5%	2723	0%
Commercial Thinning and Fertilization; redefined Base Case	2888	n/a	4398	n/a	2723	n/a
Commercial Thinning and Fertilization; One application; 15 m^3/ha increase	2935	2%	4681	7%	2723	0%
Commercial Thinning and Fertilization; Two applications; 40 m^3/ha increase	2959	3%	4786	10%	2723	0%

For the even flow scenario, OGSI adjustments produce the most significant (12%) increase above the base case level. Fertilization treatments produce a 10% gain (two applications for an estimated 40 m^3/ha increase) and an 8% gain (one application for an estimated 15 m^3/ha gain). Planting genetically improved stock will produce anticipated harvest gains of 5 – 9%. The OGSI adjustments produce immediate gains, fertilization gains are generally long-term since the stands are fertilized at the time of spacing, and the genetically improved stock would produce a long-term gain in harvest levels as the planted stock needs a full rotation before it contributes to the timber supply.

The uneven-flow scenario realizes most benefits in the short term since the even-flow scenario focuses on the long term. Density management to 2400 sph produces a projected harvest increase of 14%, density management to 1200 sph yields a 10% increase, planting with genetically improved stock produces estimated gains of 10-15%, and OGSI adjustments, double applications of fertilizer and commercial thinning with two applications of fertilizer each produce anticipated timber supply increases of 10% over the base case.

The uneven flow scenario produces negligible harvest yield increases in the long term. OGSI adjustments produce the highest increase of 5%.

4.2 Potential Strategies by Response Time Frame

For the purposes of implementing the above treatments and treatment regimes to address the timber supply decline shown in the base case, two scenarios are used – even flow and uneven flow (short-term). These scenarios are extracted from the *Stand Treatments Analysis* report by Timberline (1998).

Flow Scenario	Treatment	Strategy to Improve Timber Supply
Even Flow	OGSI adjustments	Higher site index produces earlier minimum operable piece size and enables earlier harvest of stands in the short term. OGSI study needed to confirm effect of adjustments.
	Plant genetically improved pine and spruce seedlings	Increase in harvest yields of 7 – 9% by planting with genetically improved pine and spruce seedlings. The lower estimate results from a site index increase of 5% whereas the 9% increase relates to site index increases of 7%.
	Fertilization – one application (15m^3/ha increase) on good and medium sites with lodgepole pine.	Space stands to 2400 sph and fertilize at time of spacing.
	Fertilization – two applications (40 m^3/ha increase) on good and medium sites with lodgepole pine.	Space stands to 2400 sph and fertilize at time of spacing and a second time at least 10 years prior to harvest.
	Density management to 2400 sph	Space stands to 2400 sph.
Uneven Flow (short term)	Plant genetically improved pine and spruce seedlings	Increase in harvest yields of 10 – 15% by planting with genetically improved pine and spruce seedlings. The lower estimate results from a site index increase of 3% whereas the 15% increase relates to site index increases of both 5% and 7%.
	Density management to 2400 sph	Space stands to 2400 sph.
	Density management to 1200 sph	Space stands to 1200 sph.
	OGSI adjustments	Higher site index produces earlier minimum operable piece size and enables earlier harvest of stands in the short term. OGSI study needed to confirm effect of adjustments.
	Fertilization – two applications (40 m^3/ha increase) on good and medium sites with lodgepole pine.	Space stands to 2400 sph and fertilize at time of spacing and a second time at least 10 years prior to harvest.
	Rehabilitate 50% of roads and landings.	Produces a 9% increase in projected harvest by restoring forest productivity to lost productive area covered by roads and landings.

5.0 Opportunities to Improve Timber Quality

Maintaining sustainable harvest levels in the Quesnel TSA is more a matter of timber quantity than quality with the main priority being increasing the timber supply. Current target rotations within the Quesnel TSA allow for a range of piece size objectives. The relatively stable wood flow within the TSA allows for considerations on improving wood quality. Licensees are currently including pruning for wood quality on a percentage of their high site index areas.

5.1 Potential Treatments

Density management is the most assured means of increasing long-term harvest levels, from local experience and modeling results. Through planting and juvenile spacing, second growth stands are able to reach target piece size without the threat of overcrowding and reduced stem diameter growth. Density management is therefore regarded as an effective means of moderating the adjustment to the long term harvest level and improving timber supply while ensuring that appropriate log sizes are available at rotation.

Fertilization of managed stands is also considered to be an effective means of improving the mid to long term timber supply. Most spaced and commercially thinned stands are expected to be assessed for a response to fertilization treatments following treatment and prior to rotation age.

Pruning is well documented as a treatment to improve timber quality (BC Ministry of Forests, date unknown; Barber, 1997). Other technical sources include the *Technical Background Information, Timber Enhancement Strategy* report, prepared by the Cariboo Lumber Manufacturers' Association (1997), that summarizes technical information on silviculture treatment benefits. The report lists pruning of young stands as a means to improve stem quality and log value at harvest. Stands most eligible for pruning have a high site index, developed access and close proximity to manufacturing facilities.

Some pruning has occurred in the Quesnel TSA and a moderate level of pruning activity is expected to continue to address anticipated future demand for veneer and value added products.

5.2 Potential Strategies by Response Time Frame

Strategies to improve timber quality for the Quesnel TSA are not currently well developed, and additional analysis is required to identify those treatments and stands that provide a reasonable return on investment while addressing current and future demand for high quality products. Some current trends relating to timber quality from the interim *Incremental Silviculture Strategy for British Columbia* (BC Ministry of Forests, 1999a) are:

- **Environmental services** provided by forests will likely increase in importance, with ensuing pressure to reduce harvests and conduct incremental silviculture treatments to enhance non-timber objectives.
- **Genetic improvement** of planted seedlings is expected to significantly increase stand volumes at rotation and reduce the carrying costs of treatments to improve quality.

- **Multi-storied forests** will be achieved through natural regeneration and partial cutting (which would counteract any gains from genetic improvement).
- **Longer rotation ages** will achieve a relatively high proportion of premium logs.
- **Commercial thinning** will increase to maintain harvest flows and meet silviculture objectives of increased growth on selected crop trees.
- Resolution is required on the effects of **pre-commercial thinning** on stand volume and quality.

Maintaining a diversified log profile in the long-term may not necessarily replicate the current profile and will depend on forest land objectives, management practices and evolving public expectations for Crown forests. Incremental silviculture practices will aim to improve timber supply while producing a range of products and log profiles. To some degree, the development of an incremental silviculture program to improve wood quality (eg. pruning) depends on the potential establishment of a value-added industry that requires an even flow of significant amounts of clear wood to support the necessary processing.

5.3 Timber Quality Forecast Scenarios

No timber quality forecast scenarios are available for the Quesnel TSA at this time. It is expected that timber quality will receive more attention as the level available of mature and over mature timber declines and treatments to enhance the quality of second growth stands gain prominence.

6.0 Habitat Supply

6.1 Background

Habitat supply relies on the maintenance of natural patterns of forest structural complexity associated with the various seral stages across the landscape. This structural complexity includes both physical attributes (snags, decadence features, coarse woody debris (CWD), multiple canopies and stand gaps) and species composition or forest community characteristics.

Natural species composition and structural character are established at the early seral stage, with changes following successional patterns as the forest grows older. The structural complexity of the early seral forests tends to be moderate, due to the heterogeneity of young forests, with natural shrub and deciduous communities contributing to increased early seral complexity. Immature and mature forests have the least complexity as they often crowd out herb and shrub communities through canopy closure. Such stands are typically low in representation of decadence attributes such as snags and CWD, which are important habitat features. As the forest grows old, structural complexity tends to increase as the forest canopy develops gaps from older trees dying out, and one or more understory levels from younger trees becoming established. The overall patterns of structural and species composition develop in these ecosystems based on the intensity, frequency and size of the disturbance events that initiate or maintain the stands, and on human influence over these events. Fire prevention, harvesting and silvicultural activities all modify the natural disturbance pattern on the landscape; the former favoring mature and older stands, while the latter two favoring younger seral stages. This, in turn, determines the time periods in which stands develop structural character and species composition.

Conservation of species composition and structural character of stands is implicit in the ecosystem-based approach to managing for biodiversity, as outlined in the Biodiversity Guidebook. This approach consists of managing for the species composition and structural patterns that are naturally associated with the main seral stages in the various ecosystems. A high priority is placed on maintaining minimum amounts of mature and old forest across the landscape, as the highest biodiversity values are associated with the diverse range of structural and species composition typically found in older forests. Current forest harvesting practices are based on shorter rotation cycles than present in natural ecosystems, resulting in much lower than natural amounts of mature and old forests being maintained across the landscape over the long term, along with much higher than natural amounts of early seral forests. Managed forests also tend to be structurally simple with altered communities, in comparison to natural representation.

6.2 Enhanced Forestry

Incremental silviculture activities, such as brushing and juvenile spacing, can greatly alter the natural species composition and structural character associated with the different seral stages depending on the nature and level of treatment. These treatments often significantly reduce early seral understory diversity (structural character and/or species composition), and the resulting impacts to habitat supply can persist through successive seral stages. Combined with the unnatural levels of mature and old forests and potentially higher amounts of early seral forests associated with current forest management practices, the potential exists for significant negative impacts to habitat supply. However, potential also exists for incremental silviculture activities to have a benign or beneficial impact on habitat supply when planned with consideration for habitat and biodiversity conservation.

In general, the objective of enhanced forestry activities is to increase the harvestable volume of trees within a specified rotation period. This is achieved either by allowing trees to grow faster or attain better timber attributes at smaller diameter or younger age, or by partial harvest partway through the rotation to remove competing stems for commercial use before they are lost to succession. Enhanced forestry activities that accomplish timber enhancement objectives but reduce structural character or species composition create a negative impact on habitat supply.

6.2.1 Potential Negative Impacts Associated with Incremental Silviculture

Some potential negative impacts of incremental silviculture are:

- Brushing, either manual or herbicide, removes the shrub and/or deciduous component over large portions of early seral, and consequently later successional stages, in ecosystems where these are important components of habitat supply.
- Juvenile spacing marginal pine stands eliminates a significant portion of habitat supply for small mammals and their predators (eg. snowshoe hare and lynx), and impedes wildlife movement patterns for many other species, for minimal timber benefit (often less than the cost of the spacing).
- Commercial thinning removes understory canopy layers, significantly reducing the structural (and sometimes species composition) complexity of mid, mature and old seral habitats.

6.2.2 Potential Beneficial Impacts Associated with Incremental Silviculture

Incremental silviculture can benefit habitat supply if timber objectives are properly integrated with the need to maintain stand structural character and natural species composition. Acceleration of stand development to address timber supply issues need not result in negative impacts to habitat supply if prescriptions include strategies to create or sustain representation of key attributes. The following points outline the potential planning applications for an integrated timber/habitat supply approach to incremental silviculture.

1. **Clumpy Spacing in Douglas-fir stands for Mule Deer Winter Range**
    - Develops canopy and stand attributes for snow interception, thermal cover and herb/shrub production, but may potentially reduce timber value due to retention of lower live crowns.

2. **Forage and Cover for Bears**
    - Creating stands of variable stem density to develop cover attributes and maximize production of forage shrubs and herbs in early and late seral stages (especially relevant to habitat conservation for grizzly bear); denning and day beds associated with large trees.
    - Closed canopy forests from early through mature seral stages typically do not favor species such as bears and some furbearer species that require patchy stands with potential for vigorous production of shrub/herb communities.

3. **Caribou Habitat**
    - Caribou actively avoid closed canopy young forests. Such stands provide ambush cover for predators and offer little as forage due to suppression of lichen growth and herb/shrub communities. These areas also concentrate caribou to unmanaged forest patches, which become increasingly small as logging progresses. This defeats predator avoidance strategies which require access to large areas of suitable habitat (lichens) to permit nomadic behavior.
    - Treatments should be designed to produce variable density stands that allow development of stand openings and typical herb/shrub communities while promoting development of lichen biomass.

4. **Riparian Restoration**
    - Treatments designed to accelerate development of coniferous and deciduous stands with typical herb/shrub communities along streams, wetlands and lakes where previous logging has removed forest cover, important riparian habitat, large trees providing shade and a source of large organic debris.

5. **Mitigation of Effects of High Equivalent Clearcut Area (ECA)**
    - Acceleration of canopy and stand attribute development to permit faster hydrologic recovery of impacted watersheds.
    - Treatments should be designed to develop snow interception attributes as well as stand openings which will accumulate snow that is shaded from atmospheric influences. Accelerating the development, or emulation, of old forest features will slow runoff with commensurate benefit to fish and fish habitat including water quality.

6. **Re-establishment of Natural Species Composition and Mixed Species Stands**
    - Treatments designed to permit re-establishment of typical forest communities will permit faster rehabilitation of landscapes where biodiversity targets are threatened. Impacts of previous disturbances and logging histories may be incrementally mitigated.

7. **Acceleration of Development of Stands with Appropriate Mature and Old Forest Attributes**
    - For some ecosystems, especially those managed on uneven-aged silvicultural systems, treatments may accelerate development of certain attributes that contribute to seral condition.
    - Treatments designed to accelerate development of mature and old forest may be applied strategically to re-establish habitat supply deficits resulting from short rotation forestry practices in landscapes with extensive logging history

6.3 Principles for Habitat Maintenance and Enhancement for Incremental Silviculture

For the range of enhanced forestry activities included in the Sustainable Harvest component of the Resource Management Plan, the following principles need to be applied:

1. Activities and treatments that are designed to deliver beneficial impact to habitat supply, as well as timber objectives, should be given highest investment priority.

2. The second priority for investment should be assigned to projects which intend to address timber objectives, but are designed to effectively mitigate impacts to habitat supply.

3. Activities and treatments producing negative impacts on habitat supply, and designed purely for timber enhancement, should be avoided in areas designated for integrated or special management.

7.0 Working Targets

Working targets for the Quesnel TSA are:

- Give priority to those forest management activities under pinning the Timber Supply Analysis base case.
- Reduce the impact of the transition to the long term harvest level.
- Increase the mid- and long-term harvest levels.
- Improve timber quality in the mid and long term.

8.0 Incremental Silviculture Program

TSA committee tables.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	**Treatment**	**ST or LT**	**Area**	**Cost/ha**	**Annual Spending Year 1**	**year 2**	**Year 3**	**Year 4**	**Year 5**	**Annual m3 Gain based on MAI of 3m3/ha/yr**	**Gain over TSR basecase***	**Absolute Potential Gain at rotation**	**Cost of gain (incl. of TSR) /m3 (gain calc over 80yr rotation)**	**Priority class. for 2000-1**	**Comments**
2	**Surveys**														
3	Stocking	LT	15409	$ 27	$ 411,420	$ 411,420	$ 411,420	$ 411,420	$ 411,420					1	Needed to identify the SR areas and for Site index and site occupancy gains. Includes backlog and free growing assessments
4	Backlog NSR identified as SR	LT	0	$ 30	$ -	$ -	$ -	$ -	$ -	0	0	0	$ -	1	
5	Site Occupancy	LT	15409	$ 2	$ 30,818	$ 30,818	$ 30,818	$ 30,818	$ 30,818	2,311	184,880	184,880	$ 0.17	1	Paper gain only. Cost incremental when doing other surveys. Gain estimated at 5% of survey area
6	SIBEC study (for 4 years)	LT			$ 180,000	$ 180,000	$ 180,000	$ 180,000							For 4 years Gain shown below
7	Site index	LT	15409	$ 1	$ 15,409	$ 15,409	$ 15,409	$ 15,409	$ 15,409	51,774	283,000	4,141,920	$ 0.19	1	Paper gain only. Cost incremental when doing other surveys. Estimated 12% gain from TISC. Additional site index plots are established at free growing to confirm numbers
8															
9	**Backlog**														
10	Site preparation	LT	548	$ 725	$ 397,300	$ 397,300	$ 397,300	$ 397,300	$ 397,300			0			
11	Planting	LT	609	$ 440	$ 267,960	$ 267,960	$ 267,960	$ 267,960	$ 267,960	1,827	146,160	146,160	$ 4.93	1	Estimated to plant all NSR backlog over 5 years. TISC indicated gain was 2% due to small amount of area
12	Legal Brushing	LT	27	$ 500	$ 13,500	$ 20,000	$ 30,000	$ 40,000	$ 40,000						
13	Impeded Stands Brushing	LT	3038	$ 580	$ 1,762,040	$ 1,762,040	$ 1,762,040	$ 1,762,040	$ 1,762,040						Required to ensure survival and to avoid any further backlog NSR
14	TP_SMP	LT	600	$ 70	$ 42,000	$ 42,000	$ 42,000	$ 42,000	$ 42,000						
15	Seedling Purchase		611000	$ 0.28	$ 171,080	$ 171,080	$ 171,080								
16	Maintenance of investment	ST	4000	$ 10	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000						Protection of investment to the end of the rotation
17	Genetic Gain	LT	300	$ 32	$ 9,600	$ 9,600	$ 9,600	$ 9,600	$ 9,600	504	40,320	40,320	$ 0.24	2	Where improved seed available - already factored into TSR calculations 12% of 100 ha
18															
19	**Density Management**														
20	TP_SMP	ST	5963	$ 26	$ 155,038	$ 155,038	$ 155,038	$ 155,038	$ 155,038						
21	Juvenile Spacing / Sanitation / Layer 3	ST	1544	$ 514	$ 793,616	$ 793,616	$ 793,616	$ 793,616	$ 793,616	315	165,000	165,000	$ 5.75	2	Historic levels. 7% gain on treated areas. Stands over 10,000 stems and all free-growing stands over 5000 stems. Gain recognised as being required as part of the TSR basecase
22															
23	**Fertilization**	LT	2653	$ 300	$ 795,900	$ 795,900	$ 795,900	$ 795,900	$ 795,900	663	24,000	1,920,000	$ 0.48	1	TISC indicated gain from a single fertilizer application
24	TP_SMP	LT	2653	$ 50	$ 132,650	$ 132,650	$ 132,650	$ 132,650	$ 132,650						
25															
26	**Incremental Planting**	LT	400	$ 900	$ 360,000	$ 360,000	$ 360,000	$ 360,000	$ 360,000	160	12,800	12,800	$ 29.69	3	Results in a 13% gain
27	TP_SMP	LT	400	$ 50	$ 20,000	$ 14,000	$ 14,000	$ 14,000	$ 14,000						
28	**Roads & Landing Rehab**	LT		$ 2,500	$ -	$ -	$ -	$ -	$ -		0	0		5	Returning land to productive state -but only includes recontouring ($2000/ha)and planting cost not any other treatment. Unlikely to be this low cost except in selected sites
29	TP_SMP	LT		$ 70	$ -	$ -	$ -	$ -	$ -						
30	**Pruning**	LT	93	$ 828	$ 77,004	$ 77,004	$ 77,004	$ 77,004	$ 77,004		0			3	No volume, measured in value $/m3
31	TP_SMP		93	$ 70	$ 6,510	$ 6,510	$ 6,510	$ 6,510	$ 6,510						
32	**Forest Health**														
33	**Immature**														
34	Defoliator Monitoring	ST	0	$ 25	$ -	$ -	$ -	$ -	$ -		0	0	$ -	1	Managed stands at risk, assume 20% loss in growth if not treated
35	Root Rot Management	LT	0	$ 1,800	$ -	$ -	$ -	$ -	$ -	0	0	0	$ -	2	
36	TP_SMP	LT	0	$ 300	$ -	$ -	$ -	$ -	$ -						
37	Pine Rehabilitation	LT													
38	Surveys	LT	1400	$ 30	$ 42,000	$ 42,000	$ 42,000	$ 42,000	$ 42,000						
39	Prescriptions	LT	500	$ 70	$ 35,000	$ 35,000	$ 35,000	$ 35,000	$ 35,000						
40	Rehab Treatment	LT	0	$ 700	$ -	$ 350,000	$ 350,000	$ 350,000	$ 350,000	1,000	80,000	80,000	$ -	2	
41	Sowing and Planting	LT	0	$ 660		$ 330,000	$ 330,000	$ 330,000	$ 330,000						
42															
43	**Mature Forest - Bark Beetles**														
44	Aerial Overview Survey	ST			$ 50,600	$ 50,600	$ 50,600	$ 50,600	$ 50,600					1	Required to identify outbreaks
45	Trap Tree and Bait	ST			$ 127,000	$ 127,000	$ 127,000	$ 127,000	$ 127,000				$ -	1	Volume protected from damage. Includes 8500 baits, placement and survey
46	Single tree control / Fall and Burn	ST			$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000						11000 trees
47	Ground surveys	ST			$ 829,000	$ 829,000	$ 829,000	$ 829,000	$ 829,000					1	25c/m for survey 1400 km
48	Budworm samples		3	$ 2,500	$ 7,500										Remeasurement of 3 Budworm Plots

***NB. TSR is based on the assumption that :backlog will be eliminated over 10 years,**
Forest Health programmes will function and keep losses to x%
and genetically improved stock will be planted where available.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	**Treatment**	**STor LT**	**Area**	**Cost/ha**	**Annual Spending Year 1**	**year 2**	**Year 3**	**Year 4**	**Year 5**	**Annual m3 Gain based on MAI of 3m3/ha/yr**	**Gain over TSR basecase***	**Absolute Potential Gain at rotation**	**Cost of gain (incl. of TSR) /m3 (gain calc.over 80yr rotation)**	**Priority class. for 2000-1**	**Comments**
49	**Remedial Treatment = Current Fire and Pests**														
50	Surveys		515	$ 72	$ 37,080	$ 37,080	$ 37,080	$ 37,080	$ 37,080	0		0		2	
51	Prescriptions			$ 100	$ -	$ -	$ -	$ -	$ -					2	
52	Sowing Requests			$ 400	$ -	$ -	$ -	$ -	$ -					2	
53	Slash and Site Prep		421	$ 170	$ 71,570	$ 71,570	$ 71,570	$ 71,570	$ 71,570					2	
54	Planting		400	$ 305	$ 122,000	$ 122,000	$ 122,000	$ 122,000	$ 122,000	0		0		1	
55	Brushing		291	$ 758	$ 220,578	$ 220,578	$ 220,578	$ 220,578	$ 220,578					1	
56															
57	**Rehab**														
58															
59															
60															
61															
62	**Total of all activities**				**$ 8,224,173**	**$ 8,897,173**	**$ 8,907,173**	**$ 8,746,093**	**$ 8,566,093**	**58,554**	**936,160**	**6,091,080**	**$ 1.23**		
63															

***NB. TSR is based on the assumption that :backlog will be eliminated over 10 years,**
Forest Health programmes will function and keep losses to x%
and genetically improved stock will be planted where available.

Quesnel TSA
Table A: Backlog Activities
Prepared: September 20, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
Legal Obligations		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	91	159	172	106	50	$2.7	$30.00	2
2	Site preparation	150	150	0	0	0	$143.0	$953.33	1
3	Planting	74	271	150	0	0	$29.6	$400.00	1
4	Brushing	27	21	126	10	330	$9.5	$350.00	1
5	Seed purchase	121000	0	0	0	0	$35.1	$0.29	2
6	Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
7	Pruning	0	0	0	0	0	$0.0	$0.00	9
	Totals	342	601	448	116	380	$219.9	$642.89	

Backlog Reforestation

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	7331	6185	6088	5951	5683	$210.0	$28.65	1
2	Site preparation	198	64	0	0	0	$180.5	$911.62	1
3	Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	9
4	Planting	230	281	306	0	0	$144.2	$626.96	1
5	Brushing	315	248	203	162	214	$252.0	$800.00	1
6	Seed purchase	235000	487000	208500	0	0	$58.8	$0.25	1
	Totals	8074	6778	6597	6113	5897	$845.5	$104.72	

Impeded areas

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	5246	4334	4000	4000	4000	$150.0	$28.59	2
2	Site preparation	0	0	0	0	0	$0.0	$0.00	9
3	Planting	0	50	50	50	50	$0.0	$0.00	3
4	Brushing	1721	1744	1360	1000	900	$886.8	$515.28	1
5	Seed purchase	0	50000	50000	50000	50000	$0.0	$0.00	2
	Totals	6967	6128	5410	5050	4950	$1,036.8	$148.82	

Backlog Activities - Management Unit Total

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	12668	10678	10260	10057	9733	$362.8	$28.64	
2	Site preparation	348	214	0	0	0	$323.5	$929.60	
3	Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	
4	Planting	304	602	506	50	50	$173.8	$571.71	
5	Brushing	2063	2013	1689	1172	1444	$1,148.3	$556.59	
6	Seed purchase	356000	537000	258500	50000	50000	$93.9	$0.26	
7	Max. density spacing	0	0	0	0	0	$0.0	$0.00	
8	Pruning	0	0	0	0	0	$0.0	$0.00	
9	Studies	0	0	0	0	0	$0.0	$0.00	9
	Totals	15383	13507	12455	11279	11227	$2,102.2	$136.66	

Quesnel TSA
Table B: Stand Tending Activities
Prepared: September 20, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
	Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	5253	5578	5156	4389	2623	$262.0	$49.88	2
2	Spacing	1344	1777	2022	1699	1845	$693.4	$515.92	2
3	Pruning	53	26	97	64	34	$53.0	$1,000.00	3
4	Fertilizing	2353	3003	2688	2940	2904	$705.9	$300.00	1
5	Studies (SIBEC for 4 years)	180400	180400	180400	180400	400	$190.0	$1.05	1
6	Other	0	0	0	0	0	$0.0	$0.00	9
	Totals	189403	190784	190363	189492	7806	$1,904.3	$10.05	

Quesnel TSA
Table C: Forest Health Enhancement Activities
Prepared: September 20, 1999

Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Site rehab	0	0	0	0	0	$0.0	$0.00	9
2 Spacing	0	0	0	0	0	$0.0	$0.00	9
3 Pruning	0	0	0	0	0	$0.0	$0.00	9
4 Studies	0	0	0	0	0	$0.0	$0.00	9
5 Others (Maintanence of Investment)	4000	4000	4000	4000	4000	$40.0	$10.00	1
Totals	4000	4000	4000	4000	4000	$40.0	$10.00	

Quesnel TSA
Table D: Forest Health Maintenance Activities
Prepared: September 20, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities	**Units**	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Ground Surveys	ha	26000	26000	26000	26000	26000	$800.0	30.77	1
2 Aerial Surveys	hours of flying time	150	150	150	150	150	$30.0	200.00	1
3 Single Tree Control	trees	11000	11000	11000	11000	11000	$1,000.0	90.91	1
4 MSMA treatment	trees	0	0	0	0	0	$0.0	0.00	9
5 Pheromone baiting	trees	6500	5500	5000	4500	4500	$140.0	21.54	1
6 Defoliator spraying	ha	0	0	0	0	0	$0.0	0.00	9
7 Studies	number	0	0	0	0	0	$0.0	0.00	9
8 Other		0	0	0	0	0	$0.0	0.00	9
Totals		43650	42650	42150	41650	41650	$1,970.0	45.13	

Quesnel TSA
Table E: Current Fire and Pest Activities
Prepared: September 20, 1999

	Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	415	313	323	437	442	$28.5	68.55	1
2	Site preparation	321	345	320	320	320	$56.2	175.08	1
3	Planting	300	338	342	320	320	$92.0	306.67	1
4	Brushing	191	185	208	195	208	$143.5	751.41	1
5	Max. density spacing	0	0	0	0	0	$0.0	0.00	9
6	Studies	0	0	0	0	0	$0.0	0.00	9
7	Other	0	0	0	0	0	$0.0	0.00	9
	Totals	$1,227	$1,181	$1,193	$1,272	$1,290	$320.2	260.94	

Quesnel TSA
Table F: Habitat Supply Activities
Prepared: September 20, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	9
2 Site preparation	0	0	0	0	0	0	0	9
3 Planting	0	0	0	0	0	0	0	9
4 Brushing	0	0	0	0	0	0	0	9
5 Spacing	0	0	0	0	0	0	0	9
6 Pruning	0	0	0	0	0	0	0	9
7 Studies	0	0	0	0	0	0	0	9
8 Others	0	0	0	0	0	0	0	9
Totals	0	0	0	0	0	$0	$0	

Quesnel TSA
Table G: Incremental Reforestation
Prepared: September 20, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Fill planting								
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	
Totals	0	0	0	0	0	0	$0	
Rehabilitation of Poorly Performing Stands								
1 Surveys and Prescriptions	1400	1400	1400	1400	1400	$77.0	$55.00	
2 Site Rehabilitation	0	500	500	500	500	$0.0	$700.00	
3 Sowing and Planting	0	500	500	500	500	$0.0	$660.00	
4	0	0	0	0	0	$0.0	$0.00	
5	0	0	0	0	0	$0.0	$0.00	
Totals	1400	2400	2400	2400	2400	$77.0	$55.00	
Road, Landing, Hillslope and Riparian Reforestation								
1	0	0	0	0	0	$0	$0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	
Totals	0	0	0	0	0	$0	$0	
Incremental Reforestation - Management Unit Total	1400	2400	2400	2400	2400	77	$0	2

Quesnel TSA
Summary Table
Prepared: September 20, 1999

	Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table Totals	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Table A: Backlog Activities	15,383	13,507	12,455	11,279	11,227	2,102	137	
Table B: Stand Tending Activities	189,403	190,784	190,363	189,492	7,806	1,904	10	
Table C: Forest Health Enhancement Activities	4,000	4,000	4,000	4,000	4,000	40	10	
Table D: Forest Health Maintenance Activities	43,650	42,650	42,150	41,650	41,650	1,970	45	
Table E: Current Fire and Pest Activities	1,227	1,181	1,193	1,272	1,290	320	261	
Table F: Habitat Supply Activities	0	0	0	0	0	0	0	
Table G: Incremental Reforestation	1,400	2,400	2,400	2,400	2,400	77	0	
Totals of all tables	255,063	254,522	252,561	250,093	68,373	6,414	463	

					Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table and category			**Activity**		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority
A	Backlog	Legal	1	Planning/surveys/presc.	91	159	172	106	50	3	30	2
A	Backlog	Legal	2	Site preparation	150	150	0	0	0	143	953	1
A	Backlog	Legal	3	Planting	74	271	150	0	0	30	400	1
A	Backlog	Legal	4	Brushing	27	21	126	10	330	9	350	1
A	Backlog	Legal	5	Seed Purchase	121,000	0	0	0	0	35	0	2
A	Backlog	Legal	6	Max. density spacing	0	0	0	0	0	0	0	9
A	Backlog	Legal	7	Pruning	0	0	0	0	0	0	0	9
A	Backlog	Backlog	1	Planning/surveys/presc.	7,331	6,185	6,088	5,951	5,683	210	29	1
A	Backlog	Backlog	2	Site preparation	198	64	0	0	0	181	912	1
A	Backlog	Backlog	3	Site Restoration Road/land.	0	0	0	0	0	0	0	9
A	Backlog	Backlog	4	Planting	230	281	306	0	0	144	627	1
A	Backlog	Backlog	5	Brushing	315	248	203	162	214	252	800	1
A	Backlog	Backlog	6	Seed Purchase	235,000	487,000	208,500	0	0	59	0	1
A	Backlog	Impeded	1	Planning/surveys/presc.	5,246	4,334	4,000	4,000	4,000	150	29	2

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
A	Backlog Impeded	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog Impeded	3	Planting	0	50	50	50	50	0	0	3
A	Backlog Impeded	4	Brushing	1,721	1,744	1,360	1,000	900	887	515	1
A	Backlog Impeded	5	Seed Purchase	0	50,000	50,000	50,000	50,000	0	0	2
A	Backlog Total	7	Studies	0	0	0	0	0	0	0	9
B	Stand Tending	1	Planning/surveys/presc.	5,253	5,578	5,156	4,389	2,623	262	50	2
B	Stand Tending	2	Spacing	1,344	1,777	2,022	1,699	1,845	693	516	2
B	Stand Tending	3	Pruning	53	26	97	64	34	53	1,000	3
B	Stand Tending	4	Fertilizing	2,353	3,003	2,688	2,940	2,904	706	300	1
B	Stand Tending	5	Studies (SIBEC for 4 years)	180,400	180,400	180,400	180,400	400	190	1	1
B	Stand Tending	6	Other	0	0	0	0	0	0	0	9
C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9
C	FH Enhancement	2	Spacing	0	0	0	0	0	0	0	9
C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9
C	FH Enhancement	4	Studies	0	0	0	0	0	0	0	9
C	FH Enhancement	5	Others	4,000	4,000	4,000	4,000	4,000	40	10	1
D	FH Maintenance	1	Ground Surveys (ha)	26,000	26,000	26,000	26,000	26,000	800	31	1
D	FH Maintenance	2	Aerial Surveys (hours flying)	150	150	150	150	150	30	200	1
D	FH Maintenance	3	Fall & burn treatment (trees)	11,000	11,000	11,000	11,000	11,000	1,000	91	1
D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9
D	FH Maintenance	5	Pheromone baiting (trees)	6,500	5,500	5,000	4,500	4,500	140	22	1
D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9
D	FH Maintenance	7	Studies (number)	0	0	0	0	0	0	0	9
D	FH Maintenance	8	Other	0	0	0	0	0	0	0	9
E	Current Fire/Pest	1	Planning/surveys/presc.	415	313	323	437	442	28	69	1
E	Current Fire/Pest	2	Site preparation	321	345	320	320	320	56	175	1
E	Current Fire/Pest	3	Planting	300	338	342	320	320	92	307	1
E	Current Fire/Pest	4	Brushing	191	185	208	195	208	144	751	1
E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	6	Studies	0	0	0	0	0	0	0	9
E	Current Fire/Pest	7	Other	0	0	0	0	0	0	0	9
F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9
F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9
F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9

Table Totals

			Five-Year Plan Goals (ha)					Annual Plan 2000/01		
			2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
F	Habitat Supply	5 Spacing	0	0	0	0	0	0	0	9
F	Habitat Supply	6 Pruning	0	0	0	0	0	0	0	9
F	Habitat Supply	7 Studies	0	0	0	0	0	0	0	9
F	Habitat Supply	8 Others	0	0	0	0	0	0	0	9
G	Incremental Reforestation		1,400	2,400	2,400	2,400	2,400	77	0	2
	Totals		611,063	791,522	511,061	300,093	118,373	$6,414		

District or Regional Summary Table
Prepared: September 20, 1999

			Five-Year Plan Goals (ha)					Annual Plan 2000/01			
Management Unit	**Table and category**	**Activity**	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority	Regional Priority
Select this cell to paste											

Quesnel District incl. TFL 5 and 52
Table A: Backlog Activities
Prepared: October 5, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
Legal Obligations		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	182	159	172	106	50	$4.6	$25.27	1
2	Site preparation	150	150	0	0	0	$143.0	$953.33	1
3	Planting	74	271	150	0	0	$29.6	$400.00	1
4	Brushing	27	21	126	10	330	$9.5	$351.85	1
5	Seed purchase	121000	0	0	0	0	$35.1	$0.29	2
6	Max. density spacing	74	0	0	0	0	$44.4	$600.00	1
7	Pruning	17	0	0	0	0	$10.2	$600.00	2
	Totals	524	601	448	116	380	$276.4	$527.48	
Backlog Reforestation									
1	Planning/surveys/prescriptions	9981	8335	8238	7101	6833	$282.0	$28.25	1
2	Site preparation	398	164	0	0	0	$260.5	$654.52	1
3	Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	9
4	Planting	535	451	306	0	0	$240.3	$449.16	1
5	Brushing	740	713	503	462	514	$485.8	$656.49	1
6	Seed purchase	490000	487000	208500	0	0	$135.3	$0.28	1
	Totals	11654	9663	9047	7563	7347	$1,403.9	$120.47	
Impeded areas									
1	Planning/surveys/prescriptions	5246	4334	4000	4000	4000	$150.0	$28.59	2
2	Site preparation	0	0	0	0	0	$0.0	$0.00	9
3	Planting	0	50	50	50	50	$0.0	$0.00	3
4	Brushing	2271	2294	1910	1550	1450	$1,272.5	$560.33	1
5	Seed purchase	0	50000	50000	50000	50000	$0.0	$0.00	2
	Totals	7517	6678	5960	5600	5500	$1,422.5	$189.24	
Backlog Activities - Management Unit Total									
1	Planning/surveys/prescriptions	15409	12828	12410	11207	10883	$436.6	$28.33	
2	Site preparation	548	314	0	0	0	$403.5	$736.31	
3	Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	
4	Planting	609	772	506	50	50	$269.9	$443.18	
5	Brushing	3038	3028	2539	2022	2294	$1,767.8	$581.90	
6	Seed purchase	611000	537000	258500	50000	50000	$170.4	$0.28	
7	Max. density spacing	74	0	0	0	0	$44.4	$600.00	
8	Pruning	17	0	0	0	0	$10.2	$600.00	
9	Studies	200	200	200	200	200	$10.0	$50.00	2
	Totals	19895	17142	15655	13479	13427	$3,112.8	$156.46	

Quesnel District incl. TFL 5 and 52
Table B: Stand Tending Activities
Prepared: October 5, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
	Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	5963	6118	5696	4889	3123	$289.0	$48.47	2
2	Spacing	1544	1977	2222	1899	2045	$793.4	$513.86	2
3	Pruning	93	66	137	64	34	$77.0	$827.96	3
4	Fertilizing	2653	3303	2988	3240	3204	$726.9	$273.99	1
5	Studies (SIBEC for 4 years)	180400	180400	180400	180400	400	$190.0	$1.05	1
6	Other	0	0	0	0	0	$0.0	$0.00	9
	Totals	190653	191864	191443	190492	8806	$2,076.3	$10.89	

Quesnel District incl. TFL 5 and 52
Table C: Forest Health Enhancement Activities
Prepared: October 5, 1999

Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Site rehab	0	0	0	0	0	$0.0	$0.00	9
2 Spacing	0	0	0	0	0	$0.0	$0.00	9
3 Pruning	0	0	0	0	0	$0.0	$0.00	9
4 Studies	0	0	0	0	0	$0.0	$0.00	9
5 Others (Maintanence of Investment)	4000	4000	4000	4000	4000	$40.0	$10.00	1
Totals	4000	4000	4000	4000	4000	$40.0	$10.00	

Quesnel District incl. TFL 5 and 52
Table D: Forest Health Maintenance Activities
Prepared: October 5, 1999

			Five-year Plan Goals (ha)					Annual Plan 2000/01		
	Activities	**Units**	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Ground Surveys	ha	27200	26760	27200	26700	26700	$829.4	30.49	1
2	Aerial Surveys	hours of flying time	206	206	206	206	206	$50.5	245.15	1
3	Single Tree Control	trees	11000	11000	11000	11000	11000	$1,000.0	90.91	1
4	MSMA treatment	trees	0	0	0	0	0	$0.0	0.00	9
5	Pheromone baiting	trees	8500	7500	6800	6300	6300	$182.0	21.41	1
6	Defoliator spraying	ha	0	0	0	0	0	$0.0	0.00	9
7	Studies	number	3	0	0	0	0	$7.5	2,500.00	2
8	Other		0	0	0	0	0	$0.0	0.00	9
	Totals		46909	45466	45206	44206	44206	$2,069.4	44.12	

Quesnel District incl. TFL 5 and 52
Table E: Current Fire and Pest Activities
Prepared: October 5, 1999

Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	515	413	423	537	542	$36.9	71.65	1
2 Site preparation	421	445	420	420	420	$71.2	169.12	1
3 Planting	400	438	442	42	420	$122.0	305.00	1
4 Brushing	291	285	308	295	308	$220.5	757.73	1
5 Max. density spacing	0	0	0	0	0	$0.0	0.00	9
6 Studies	1050	1050	0	0	0	$35.0	33.33	1
7 Other	0	0	0	0	0	$0.0	0.00	9
Totals	$2,677	$2,631	$1,593	$1,294	$1,690	$485.6	181.40	

Quesnel District incl. TFL 5 and 52
Table F: Habitat Supply Activities
Prepared: October 5, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	9
2 Site preparation	0	0	0	0	0	0	0	9
3 Planting	0	0	0	0	0	0	0	9
4 Brushing	0	0	0	0	0	0	0	9
5 Spacing	0	0	0	0	0	0	0	9
6 Pruning	0	0	0	0	0	0	0	9
7 Studies	0	0	0	0	0	0	0	9
8 Others	0	0	0	0	0	0	0	9
Totals	0	0	0	0	0	$0	$0	

Quesnel District incl. TFL 5 and 52
Table G: Incremental Reforestation
Prepared: October 5, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
Incremental planting	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	800	400	400	400	0	$8.0	$10.00	
2 Site preparation	100	100	100	100	0	$45.0	$450.00	
3 Planting	400	400	400	400	0	$90.0	$225.00	
4 Brushing	400	600	600	600	600	$220.0	$550.00	
5 Seed purchase	0	0	0	0	0	$0.0	$0.00	
Totals	1700	1500	1500	600	600	$363.0	$213.53	
Rehabilitation of Poorly Performing Stands								
1 Surveys and Prescriptions	1400	1400	1400	1400	1400	$77.0	$55.00	
2 Site Rehabilitation	0	500	500	500	500	$0.0	$700.00	
3 Sowing and Planting	0	500	500	500	500	$0.0	$660.00	
4	0	0	0	0	0	$0.0	$0.00	
5	0	0	0	0	0	$0.0	$0.00	
Totals	1400	2400	2400	2400	2400	$77.0	$55.00	
Road, Landing, Hillslope and Riparian Reforestation								
1	0	0	0	0	0	$0	$0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	
Totals	0	0	0	0	0	$0	$0	
Incremental Reforestation - Management Unit Total	3100	3900	3900	3000	3000	440.0	$141.94	2

Quesnel District incl. TFL 5 and 52
Summary Table
Prepared: October 5, 1999

	Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table Totals	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Table A: Backlog Activities	19,895	17,142	15,655	13,479	13,427	3,113	156	
Table B: Stand Tending Activities	190,653	191,864	191,443	190,492	8,806	2,076	11	
Table C: Forest Health Enhancement Activities	4,000	4,000	4,000	4,000	4,000	40	10	
Table D: Forest Health Maintenance Activities	46,909	45,466	45,206	44,206	44,206	2,069	44	
Table E: Current Fire and Pest Activities	2,677	2,631	1,593	1,294	1,690	486	181	
Table F: Habitat Supply Activities	0	0	0	0	0	0	0	
Table G: Incremental Reforestation	3,100	3,900	3,900	3,000	3,000	440	142	
Totals of all tables	267,234	265,003	261,797	256,471	75,129	8,224	545	

					Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table and category			**Activity**		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority
A	Backlog	Legal	1	Planning/surveys/presc.	182	159	172	106	50	5	25	1
A	Backlog	Legal	2	Site preparation	150	150	0	0	0	143	953	1
A	Backlog	Legal	3	Planting	74	271	150	0	0	30	400	1
A	Backlog	Legal	4	Brushing	27	21	126	10	330	10	352	1
A	Backlog	Legal	5	Seed Purchase	121,000	0	0	0	0	35	0	2
A	Backlog	Legal	6	Max. density spacing	74	0	0	0	0	44	600	1
A	Backlog	Legal	7	Pruning	17	0	0	0	0	10	600	2
A	Backlog	Backlog	1	Planning/surveys/presc.	9,981	8,335	8,238	7,101	6,833	282	28	1
A	Backlog	Backlog	2	Site preparation	398	164	0	0	0	261	655	1
A	Backlog	Backlog	3	Site Restoration Road/land.	0	0	0	0	0	0	0	9
A	Backlog	Backlog	4	Planting	535	451	306	0	0	240	449	1
A	Backlog	Backlog	5	Brushing	740	713	503	462	514	486	656	1
A	Backlog	Backlog	6	Seed Purchase	490,000	487,000	208,500	0	0	135	0	1
A	Backlog	Impeded	1	Planning/surveys/presc.	5,246	4,334	4,000	4,000	4,000	150	29	2

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
A	Backlog Impeded	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog Impeded	3	Planting	0	50	50	50	50	0	0	3
A	Backlog Impeded	4	Brushing	2,271	2,294	1,910	1,550	1,450	1,273	560	1
A	Backlog Impeded	5	Seed Purchase	0	50,000	50,000	50,000	50,000	0	0	2
A	Backlog Total	7	Studies	200	200	200	200	200	10	50	2
B	Stand Tending	1	Planning/surveys/presc.	5,963	6,118	5,696	4,889	3,123	289	48	2
B	Stand Tending	2	Spacing	1,544	1,977	2,222	1,899	2,045	793	514	2
B	Stand Tending	3	Pruning	93	66	137	64	34	77	828	3
B	Stand Tending	4	Fertilizing	2,653	3,303	2,988	3,240	3,204	727	274	1
B	Stand Tending	5	Studies (SIBEC for 4 years)	180,400	180,400	180,400	180,400	400	190	1	1
B	Stand Tending	6	Other	0	0	0	0	0	0	0	9
C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9
C	FH Enhancement	2	Spacing	0	0	0	0	0	0	0	9
C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9
C	FH Enhancement	4	Studies	0	0	0	0	0	0	0	9
C	FH Enhancement	5	Others	4,000	4,000	4,000	4,000	4,000	40	10	1
D	FH Maintenance	1	Ground Surveys (ha)	27,200	26,760	27,200	26,700	26,700	829	30	1
D	FH Maintenance	2	Aerial Surveys (hours flying)	206	206	206	206	206	51	245	1
D	FH Maintenance	3	Fall & burn treatment (trees)	11,000	11,000	11,000	11,000	11,000	1,000	91	1
D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9
D	FH Maintenance	5	Pheromone baiting (trees)	8,500	7,500	6,800	6,300	6,300	182	21	1
D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9
D	FH Maintenance	7	Studies (number) Budworm	3	0	0	0	0	8	2,500	2
D	FH Maintenance	8	Other	0	0	0	0	0	0	0	9
E	Current Fire/Pest	1	Planning/surveys/presc.	515	413	423	537	542	37	72	1
E	Current Fire/Pest	2	Site preparation	421	445	420	420	420	71	169	1
E	Current Fire/Pest	3	Planting	400	438	442	42	420	122	305	1
E	Current Fire/Pest	4	Brushing	291	285	308	295	308	221	758	1
E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	6	Studies	1,050	1,050	0	0	0	35	33	1
E	Current Fire/Pest	7	Other	0	0	0	0	0	0	0	9
F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9
F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9
F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9

Table Totals

			Five-Year Plan Goals (ha)					Annual Plan 2000/01		
			2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
F	Habitat Supply	5 Spacing	0	0	0	0	0	0	0	9
F	Habitat Supply	6 Pruning	0	0	0	0	0	0	0	9
F	Habitat Supply	7 Studies	0	0	0	0	0	0	0	9
F	Habitat Supply	8 Others	0	0	0	0	0	0	0	9
G	Incremental Reforestation		3,100	3,900	3,900	3,000	3,000	440	142	2
	Totals		878,234	802,003	520,297	306,471	125,129	$8,224		

District or Regional Summary Table
Prepared: October 5, 1999

					Five-Year Plan Goals (ha)					Annual Plan 2000/01			
Management Unit	**Table and category**		**Activity**		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority	Regional Priority
Quesnel District incl. TFL 5 and 52	A	Backlog Legal	1	Planning/surveys/presc.	182	159	172	106	50	5	25	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Legal	2	Site preparation	150	150	0	0	0	143	953	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Legal	3	Planting	74	271	150	0	0	30	400	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Legal	4	Brushing	27	21	126	10	330	10	352	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Legal	6	Max. density spacing	74	0	0	0	0	44	600	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Backlog	1	Planning/surveys/presc.	9,981	8,335	8,238	7,101	6,833	282	28	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Backlog	2	Site preparation	398	164	0	0	0	261	655	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Backlog	4	Planting	535	451	306	0	0	240	449	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Backlog	5	Brushing	370	713	503	462	514	243	656	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Backlog	6	Seed Purchase	490,000	487,000	208,500	0	0	135	0	1	0
Quesnel District incl. TFL 5 and 52	A	Backlog Impeded	4	Brushing	1,136	2,294	1,910	1,550	1,450	637	560	1	0
Quesnel District incl. TFL 5 and 52	B	Stand Tending	4	Fertilizing	1,327	3,303	2,988	3,240	3,204	364	274	1	0
Quesnel District incl. TFL 5 and 52	B	Stand Tending	5	Studies (SIBEC for 4 years)	180,400	180,400	180,400	180,400	400	190	1	1	0
Quesnel District incl. TFL 5 and 52	C	FH Enhancement	5	Others	4,000	4,000	4,000	4,000	4,000	40	10	1	0
Quesnel District incl. TFL 5 and 52	D	FH Maintenance	1	Ground Surveys (ha)	27,200	26,760	27,200	26,700	26,700	829	30	1	0
Quesnel District incl. TFL 5 and 52	D	FH Maintenance	2	Aerial Surveys (hours flying	206	206	206	206	206	51	245	1	0
Quesnel District incl. TFL 5 and 52	D	FH Maintenance	3	Fall & burn treatment (trees	11,000	11,000	11,000	11,000	11,000	1,000	91	1	0
Quesnel District incl. TFL 5 and 52	D	FH Maintenance	5	Pheromone baiting (trees)	8,500	7,500	6,800	6,300	6,300	182	21	1	0
Quesnel District incl. TFL 5 and 52	E	Current Fire/Pest	1	Planning/surveys/presc.	515	413	423	537	542	37	72	1	0
Quesnel District incl. TFL 5 and 52	E	Current Fire/Pest	2	Site preparation	421	445	420	420	420	71	169	1	0
Quesnel District incl. TFL 5 and 52	E	Current Fire/Pest	3	Planting	400	438	442	42	420	122	305	1	0
Quesnel District incl. TFL 5 and 52	E	Current Fire/Pest	4	Brushing	291	285	308	295	308	221	758	1	0
Quesnel District incl. TFL 5 and 52	E	Current Fire/Pest	6	Studies	1,050	1,050	0	0	0	35	33	1	0
Quesnel District incl. TFL 5 and 52	B	Stand Tending	1	Planning/surveys/presc.	2,982	6,118	5,696	4,889	3,123	145	48	2	0
Quesnel District incl. TFL 5 and 52	B	Stand Tending	2	Spacing	772	1,977	2,222	1,899	2,045	397	514	2	0
Quesnel District incl. TFL 5 and 52	A	Backlog Backlog	5	Brushing	370					243	656	2	0
Quesnel District incl. TFL 5 and 52	A	Backlog Impeded	4	Brushing	1,135					636	560	2	0
Quesnel District incl. TFL 5 and 52	B	Stand Tending	5	Fertilizing	1,326					363	274	2	
Quesnel District incl. TFL 5 and 52	B	Stand Tending	3	Planning/surveys/presc.	2,981					144		2	
Quesnel District incl. TFL 5 and 52	B	Stand Tending	4	Spacing	772					396		2	
Quesnel District incl. TFL 5 and 52	G	Incremental Reforestation			3,100	3,900	3,900	3,000	3,000	440	142	2	0
Quesnel District incl. TFL 5 and 52	A	Backlog Total	7	Studies	200	200	200	200	200	10	50	2	0
Quesnel District incl. TFL 5 and 52	A	Backlog Legal	5	Seed Purchase	121,000	0	0	0	0	35	0	2	0
Quesnel District incl. TFL 5 and 52	A	Backlog Legal	7	Pruning	17	0	0	0	0	10	600	2	0
Quesnel District incl. TFL 5 and 52	A	Backlog Impeded	1	Planning/surveys/presc.	5,246	4,334	4,000	4,000	4,000	150	29	2	0
Quesnel District incl. TFL 5 and 52	A	Backlog Impeded	5	Seed Purchase	0	50,000	50,000	50,000	50,000	0	0	2	0
Quesnel District incl. TFL 5 and 52	D	FH Maintenance	7	Studies (number) Budworm	3	0	0	0	0	8	2,500	2	0
Quesnel District incl. TFL 5 and 52	A	Backlog Impeded	3	Planting	0	50	50	50	50	0	0	3	0
Quesnel District incl. TFL 5 and 52	B	Stand Tending	3	Pruning	93	66	137	64	34	77	828	3	0
Quesnel District incl. TFL 5 and 52	F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9	0

Quesnel District incl. TFL 5 and 52	F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	F	Habitat Supply	5	Spacing	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	F	Habitat Supply	6	Pruning	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	F	Habitat Supply	7	Studies	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	F	Habitat Supply	8	Others	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	A	Backlog Backlog	3	Site Restoration Road/land.	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	A	Backlog Impeded	2	Site preparation	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	B	Stand Tending	6	Other	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	C	FH Enhancement	2	Spacing	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	C	FH Enhancement	4	Studies	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	D	FH Maintenance	8	Other	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	9	0
Quesnel District incl. TFL 5 and 52	E	Current Fire/Pest	7	Other	0	0	0	0	0	0	0	9	0

Management Unit:Weldwood of Canada - TFL 5
Table A: Backlog Activities
Prepared: September 7,1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
Legal Obligations	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0.0	$0.00	9
2 Site preparation	0	0	0	0	0	$0.0	$0.00	9
3 Planting	0	0	0	0	0	$0.0	$0.00	9
4 Brushing	0	0	0	0	0	$0.0	$0.00	9
5 Seed purchase	0	0	0	0	0	$0.0	$0.00	9
6 Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
7 Pruning	0	0	0	0	0	$0.0	$0.00	9
Totals	0	0	0	0	0	$0.0	$0.00	

Backlog Reforestation

1 Planning/surveys/prescriptions	1150	1150	1150	1150	1150	$34.5	$30.01	1
2 Site preparation	0	0	0	0	0	$0.0	$0.00	9
3 Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	9
4 Planting	0	0	0	0	0	$0.0	$0.00	9
5 Brushing	0	0	0	0	0	$0.0	$0.00	9
6 Seed purchase	0	0	0	0	0	$0.0	$0.00	9
Totals	1150	1150	1150	1150	1150	$34.5	$30.01	

Impeded areas

1 Planning/surveys/prescriptions	0	0	0	0	0	$0.0	$0.00	9
2 Site preparation	0	0	0	0	0	$0.0	$0.00	9
3 Planting	0	0	0	0	0	$0.0	$0.00	9
4 Brushing	550	550	550	550	550	$385.7	$701.27	1
5 Seed purchase	0	0	0	0	0	$0.0	$0.00	9
Totals	550	550	550	550	550	$385.7	$701.27	

Backlog Activities - Management Unit Total

1 Planning/surveys/prescriptions	1150	1150	1150	1150	1150	$34.5	$30.01	
2 Site preparation	0	0	0	0	0	$0.0	$0.00	
3 Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	
4 Planting	0	0	0	0	0	$0.0	$0.00	
5 Brushing	550	550	550	550	550	$385.7	$701.27	
6 Seed purchase	0	0	0	0	0	$0.0	$0.00	
7 Max. density spacing	0	0	0	0	0	$0.0	$0.00	
8 Pruning	0	0	0	0	0	$0.0	$0.00	
9 Studies	0	0	0	0	0	$0.0	$0.00	9
Totals	1700	1700	1700	1700	1700	$420.2	$247.18	

Management Unit: TFL 5

Table B: Stand Tending Activities

Prepared: September 7,1999

Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	50	50	50	50	50	$2.5	$50.00	2
2 Spacing	50	50	50	50	50	$25.0	$500.00	2
3 Pruning	0	0	0	0	0	$0.0	$0.00	9
4 Fertilizing	0	0	0	0	0	$0.0	$0.00	9
5 Studies	0	0	0	0	0	$0.0	$0.00	9
6 Other	0	0	0	0	0	$0.0	$0.00	9
Totals	100	100	100	100	100	$27.5	$274.99	

TFL 5
Table C: Forest Health Enhancement Activities
Prepared: September 7, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Site rehab	0	0	0	0	0	$0.0	$0.00	9
2	Spacing	0	0	0	0	0	$0.0	$0.00	9
3	Pruning	0	0	0	0	0	$0.0	$0.00	9
4	Studies	0	0	0	0	0	$0.0	$0.00	9
5	Others	0	0	0	0	0	$0.0	$0.00	9
	Totals	0	0	0	0	0	$0.0	$0.00	

Management Unit: TFL 5
Table D: Forest Health Maintenance Activities
Prepared: September 4, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities	**Units**	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Ground Surveys	ha	200	200	200	200	200	$4.4	$22.00	1
2 Aerial Surveys	hours of flying time	6	6	6	6	6	$5.1	$850.00	1
3 Single Tree Control	trees	0	0	0	0	0	$0.0	$0.00	9
4 MSMA treatment	trees	0	0	0	0	0	$0.0	$0.00	9
5 Pheromone baiting	trees	1500	1500	1500	1500	1500	$31.0	$20.67	1
6 Defoliator spraying	ha	0	0	0	0	0	$0.0	$0.00	9
7 Studies	number	0	0	0	0	0	$0.0	$0.00	9
8 Other	traps	30	30	30	30	30	$12.0	$400.00	2
Totals		1736	1736	1736	1736	1736	$52.5	$30.24	

Management Unit: TFL 5
Table E: Current Fire and Pest Activities
Prepared: September 4,1999

Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	100	100	100	100	100	$8.4	$84.00	1
2 Site preparation	100	100	100	100	100	$15.0	$150.00	1
3 Planting	100	100	100	100	100	$30.0	$300.00	1
4 Brushing	100	100	100	100	100	$77.0	$770.00	1
5 Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
6 Studies	1050	1050	0	0	0	$35.0	$33.33	1
7 Other	0	0	0	0	0	$0.0	$0.00	9
Totals	$1,450	$1,450	$400	$400	$400	$165.4	$114.07	

5/18/2005

TFL 5
Table F: Habitat Supply Activities
Prepared: September 7, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0.0	$0.00	9
2 Site preparation	0	0	0	0	0	$0.0	$0.00	9
3 Planting	0	0	0	0	0	$0.0	$0.00	9
4 Brushing	0	0	0	0	0	$0.0	$0.00	9
5 Spacing	0	0	0	0	0	$0.0	$0.00	9
6 Pruning	0	0	0	0	0	$0.0	$0.00	9
7 Studies	0	0	0	0	0	$0.0	$0.00	9
8 Others	0	0	0	0	0	$0.0	$0.00	9
Totals	0	0	0	0	0	$0.0	$0.00	

TFL 5
Table G: Incremental Reforestation
Prepared: September 7, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Fill planting								
1 Planning/surveys/prescriptions	0	0	0	0	0	$0.0	$0.00	
2	0	0	0	0	0	$0.0	$0.00	
3	0	0	0	0	0	$0.0	$0.00	
4	0	0	0	0	0	$0.0	$0.00	
5	0	0	0	0	0	$0.0	$0.00	
Totals	0	0	0	0	0	$0.0	$0.00	
Rehabilitation of Poorly Performing Stands								
1	0	0	0	0	0	$0.0	$0.00	
2	0	0	0	0	0	$0.0	$0.00	
3	0	0	0	0	0	$0.0	$0.00	
4	0	0	0	0	0	$0.0	$0.00	
5	0	0	0	0	0	$0.0	$0.00	
Totals	0	0	0	0	0	$0.0	$0.00	
Road, Landing, Hillslope and Riparian Reforestation								
1	0	0	0	0	0	$0.0	$0.00	
2	0	0	0	0	0	$0.0	$0.00	
3	0	0	0	0	0	$0.0	$0.00	
4	0	0	0	0	0	$0.0	$0.00	
5	0	0	0	0	0	$0.0	$0.00	
Totals	0	0	0	0	0	$0.0	$0.00	
Incremental Reforestation - Management Unit Total	0	0	0	0	0	0.0	$0.00	9

Summary Table

Prepared: September 4,1999

	Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table Totals	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Table A: Backlog Activities	1,700	1,700	1,700	1,700	1,700	420	247	
Table B: Stand Tending Activities	100	100	100	100	100	28	275	
Table C: Forest Health Enhancement Activities	0	0	0	0	0	0	0	
Table D: Forest Health Maintenance Activities	1,736	1,736	1,736	1,736	1,736	53	30	
Table E: Current Fire and Pest Activities	1,450	1,450	400	400	400	165	114	
Table F: Habitat Supply Activities	0	0	0	0	0	0	0	
Table G: Incremental Reforestation	0	0	0	0	0	0	0	
Totals of all tables	4,986	4,986	3,936	3,936	3,936	666	666	

Table and category			Activity		Five-Year Plan Goals (ha)					Annual Plan 2000/01		
					2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority
A	Backlog	Legal	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
A	Backlog	Legal	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog	Legal	3	Planting	0	0	0	0	0	0	0	9
A	Backlog	Legal	4	Brushing	0	0	0	0	0	0	0	9
A	Backlog	Legal	5	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog	Legal	6	Max. density spacing	0	0	0	0	0	0	0	9
A	Backlog	Legal	7	Pruning	0	0	0	0	0	0	0	9
A	Backlog	Backlog	1	Planning/surveys/presc.	1,150	1,150	1,150	1,150	1,150	35	30	1
A	Backlog	Backlog	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog	Backlog	3	Site Restoration Road/land.	0	0	0	0	0	0	0	9
A	Backlog	Backlog	4	Planting	0	0	0	0	0	0	0	9
A	Backlog	Backlog	5	Brushing	0	0	0	0	0	0	0	9
A	Backlog	Backlog	6	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog	Impeded	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
A	Backlog	Impeded	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog	Impeded	3	Planting	0	0	0	0	0	0	0	9

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
A	Backlog Impeded	4	Brushing	550	550	550	550	550	386	701	1
A	Backlog Impeded	5	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog Total	7	Studies	0	0	0	0	0	0	0	9
B	Stand Tending	1	Planning/surveys/presc.	50	50	50	50	50	3	50	2
B	Stand Tending	2	Spacing	50	50	50	50	50	25	500	2
B	Stand Tending	3	Pruning	0	0	0	0	0	0	0	9
B	Stand Tending	4	Fertilizing	0	0	0	0	0	0	0	9
B	Stand Tending	5	Studies	0	0	0	0	0	0	0	9
B	Stand Tending	6	Other	0	0	0	0	0	0	0	9
C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9
C	FH Enhancement	2	Spacing	0	0	0	0	0	0	0	9
C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9
C	FH Enhancement	4	Studies	0	0	0	0	0	0	0	9
C	FH Enhancement	5	Others	0	0	0	0	0	0	0	9
D	FH Maintenance	1	Ground Surveys (ha)	200	200	200	200	200	4	22	1
D	FH Maintenance	2	Aerial Surveys (hours flying)	6	6	6	6	6	5	850	1
D	FH Maintenance	3	Single Tree Control	0	0	0	0	0	0	0	9
D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9
D	FH Maintenance	5	Pheromone baiting (trees)	1,500	1,500	1,500	1,500	1,500	31	21	1
D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9
D	FH Maintenance	7	Studies (number)	0	0	0	0	0	0	0	9
D	FH Maintenance	8	Other	30	30	30	30	30	12	400	2
E	Current Fire/Pest	1	Planning/surveys/presc.	100	100	100	100	100	8	84	1
E	Current Fire/Pest	2	Site preparation	100	100	100	100	100	15	150	1
E	Current Fire/Pest	3	Planting	100	100	100	100	100	30	300	1
E	Current Fire/Pest	4	Brushing	100	100	100	100	100	77	770	1
E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	6	Studies	1,050	1,050	0	0	0	35	33	1
E	Current Fire/Pest	7	Other	0	0	0	0	0	0	0	9
F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9
F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9
F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9
F	Habitat Supply	5	Spacing	0	0	0	0	0	0	0	9
F	Habitat Supply	6	Pruning	0	0	0	0	0	0	0	9

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
F	Habitat Supply	7	Studies	0	0	0	0	0	0	0	9
F	Habitat Supply	8	Others	0	0	0	0	0	0	0	9
G	Incremental Reforestation			0	0	0	0	0	0	0	9
	Totals			4,986	4,986	3,936	3,936	3,936	$666		

District or Regional Summary Table
Prepared: September 7, 1999

			Five-Year Plan Goals (ha)					Annual Plan 2000/01			
Management Unit	Table and category	Activity	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority	Regional Priority
Select this cell to paste											

TFL 52
Table A: Backlog Activities
Prepared: Sept 7th, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Legal Obligations								
1 Planning/surveys/prescriptions	91	0	0	0	0	$1.9	$20.88	1
2 Site preparation	0	0	0	0	0	$0.0	$0.00	9
3 Planting	0	0	0	0	0	$0.0	$0.00	9
4 Brushing	0	0	0	0	0	$0.0	$0.00	9
5 Seed purchase	0	0	0	0	0	$0.0	$0.00	9
6 Max. density spacing	74	0	0	0	0	$44.4	$600.00	1
7 Pruning	17	0	0	0	0	$10.2	$600.00	2
Totals	182	0	0	0	0	$56.5	$310.43	
Backlog Reforestation								
1 Planning/surveys/prescriptions	1500	1000	1000	0	0	$37.5	$25.00	1
2 Site preparation	200	100	0	0	0	$80.0	$400.00	1
3 Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	9
4 Planting	305	170	0	0	0	$96.1	$315.08	1
5 Brushing	425	465	300	300	300	$233.8	$550.12	1
6 Seed purchase	255000	0	0	0	0	$76.5	$0.30	9
Totals	2430	1735	1300	300	300	$523.9	$215.60	
Impeded areas								
1 Planning/surveys/prescriptions	0	0	0	0	0	$0.0	0.00	9
2 Site preparation	0	0	0	0	0	$0.0	0.00	9
3 Planting	0	0	0	0	0	$0.0	0.00	9
4 Brushing	0	0	0	0	0	$0.0	0.00	9
5 Seed purchase	0	0	0	0	0	$0.0	0.00	9
Totals	0	0	0	0	0	$0.0	0.00	
Backlog Activities - Management Unit Total								
1 Planning/surveys/prescriptions	1591	1000	1000	0	0	$39.4	$24.76	
2 Site preparation	200	100	0	0	0	$80.0	$400.00	
3 Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	
4 Planting	305	170	0	0	0	$96.1	$315.08	
5 Brushing	425	465	300	300	300	$233.8	$550.12	
6 Seed purchase	255000	0	0	0	0	$76.5	$0.30	
7 Max. density spacing	74	0	0	0	0	$44.4	$600.00	
8 Pruning	17	0	0	0	0	$10.2	$600.00	
9 Studies	200	200	200	200	200	$10.0	$50.00	2
Totals	257812	1935	1500	500	500	$590.4	$2.29	

TFL 52
Table B: Stand Tending Activities
Prepared: Sept 7th, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
	Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	490	490	490	450	450	$24.5	$50.00	1
2	Spacing	150	150	150	150	150	$75.0	$500.00	1
3	Pruning	40	40	40	0	0	$24.0	$600.00	3
4	Fertilizing	300	300	300	300	300	$21.0	$70.00	2
5	Studies	0	0	0	0	0	$0.0	$0.00	9
6	Other	0	0	0	0	0	$0.0	$0.00	9
	Totals	980	980	980	900	900	$144.5	$147.45	

TFL 52
Table C: Forest Health Enhancement Activities
Prepared: Sept 7th, 1999

Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Site rehab	0	0	0	0	0	$0	$0	9
2 Spacing	0	0	0	0	0	0	0	9
3 Pruning	0	0	0	0	0	0	0	9
4 Studies	0	0	0	0	0	0	0	9
5 Others	0	0	0	0	0	0	0	9
Totals	0	0	0	0	0	$0	$0	

TFL 52
Table D: Forest Health Maintenance Activities
Prepared: Sept 7th, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01			
Activities	Units	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority	
1 Ground Surveys	ha	1000	560	1000	500	500	$25.0	$25.00	1	
2 Aerial Surveys	hours of flying time	10/40	5/4	5/4	5/4	5/4	$15.5	$750/200	1	heli/fixed wing
3 Single Tree Control	trees	0	0	0	0	0	$0.0	$0.00	9	
4 MSMA treatment	trees	0	0	0	0	0	$0.0	$0.00	9	
5 Pheromone baiting	trees	500	500	300	300	300	$11.0	$22.00	1	
6 Defoliator spraying	ha	0	0	0	0	0	$0.0	$0.00	9	
7 Studies	number	3	0	0	0	0	$7.5	$2,500.00	2	2 yr budworm plots
8 Other		0	0	0	0	0	$0.0	$0.00	9	
Totals		1503	1060	1300	800	800	$59.0	$39.25		

TFL 52

Table E: Current Fire and Pest Activities

Prepared: Sept 7th, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
	Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	9
2	Site preparation	0	0	0	0	0	0	0	9
3	Planting	0	0	0	0	0	0	0	9
4	Brushing	0	0	0	0	0	0	0	9
5	Max. density spacing	0	0	0	0	0	0	0	9
6	Studies	0	0	0	0	0	0	0	9
7	Other	0	0	0	0	0	0	0	9
	Totals	$0	$0	$0	$0	$0	$0	$0	

TFL 52
Table F: Habitat Supply Activities
Prepared: Sept 7th, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	9
2 Site preparation	0	0	0	0	0	0	0	9
3 Planting	0	0	0	0	0	0	0	9
4 Brushing	0	0	0	0	0	0	0	9
5 Spacing	0	0	0	0	0	0	0	9
6 Pruning	0	0	0	0	0	0	0	9
7 Studies	0	0	0	0	0	0	0	9
8 Others	0	0	0	0	0	0	0	9
Totals	0	0	0	0	0	$0	$0	

TFL 52
Table G: Incremental Reforestation
Prepared: Sept 7th, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
Incremental planting	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	800	400	400	400	0	$8.0	$10.00	
2 Site preparation	100	100	100	100	0	$45.0	$450.00	
3 Planting	400	400	400	400	0	$90.0	$225.00	
4 Brushing	400	600	600	600	600	$220.0	$550.00	
5 Seed purchase	0	0	0	0	0	$0.0	$0.00	
Totals	1700	1500	1500	600	600	$363.0	$213.53	
Rehabilitation of Poorly Performing Stands								
1	0	0	0	0	0	$0.0	$0.00	
2	0	0	0	0	0	$0.0	$0.00	
3	0	0	0	0	0	$0.0	$0.00	
4	0	0	0	0	0	$0.0	$0.00	
5	0	0	0	0	0	$0.0	$0.00	
Totals	0	0	0	0	0	$0	$0	
Road, Landing, Hillslope and Riparian Reforestation								
1	0	0	0	0	0	$0.0	$0.00	
2	0	0	0	0	0	$0.0	$0.00	
3	0	0	0	0	0	$0.0	$0.00	
4	0	0	0	0	0	$0.0	$0.00	
5	0	0	0	0	0	$0.0	$0.00	
Totals	0	0	0	0	0	$0.0	$0.00	
Incremental Reforestation - Management Unit Total	1700	1500	1500	600	600	363.0	$213.53	3

TFL 52
Summary Table
Prepared: Sept 7th, 1999

	Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table Totals	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Table A: Backlog Activities	257,812	1,935	1,500	500	500	590	2	
Table B: Stand Tending Activities	980	980	980	900	900	145	147	
Table C: Forest Health Enhancement Activities	0	0	0	0	0	0	0	
Table D: Forest Health Maintenance Activities	1,503	1,060	1,300	800	800	59	39	
Table E: Current Fire and Pest Activities	0	0	0	0	0	0	0	
Table F: Habitat Supply Activities	0	0	0	0	0	0	0	
Table G: Incremental Reforestation	1,700	1,500	1,500	600	600	363	214	
Totals of all tables	261,995	5,475	5,280	2,800	2,800	1,157	403	

					Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table and category			**Activity**		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority
A	Backlog	Legal	1	Planning/surveys/presc.	91	0	0	0	0	2	21	1
A	Backlog	Legal	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog	Legal	3	Planting	0	0	0	0	0	0	0	9
A	Backlog	Legal	4	Brushing	0	0	0	0	0	0	0	9
A	Backlog	Legal	5	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog	Legal	6	Max. density spacing	74	0	0	0	0	44	600	1
A	Backlog	Legal	7	Pruning	17	0	0	0	0	10	600	2
A	Backlog	Backlog	1	Planning/surveys/presc.	1,500	1,000	1,000	0	0	38	25	1
A	Backlog	Backlog	2	Site preparation	200	100	0	0	0	80	400	1
A	Backlog	Backlog	3	Site Restoration Road/land.	0	0	0	0	0	0	0	9
A	Backlog	Backlog	4	Planting	305	170	0	0	0	96	315	1
A	Backlog	Backlog	5	Brushing	425	465	300	300	300	234	550	1
A	Backlog	Backlog	6	Seed Purchase	255,000	0	0	0	0	77	0	9
A	Backlog	Impeded	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
A	Backlog Impeded	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog Impeded	3	Planting	0	0	0	0	0	0	0	9
A	Backlog Impeded	4	Brushing	0	0	0	0	0	0	0	9
A	Backlog Impeded	5	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog Total	7	Studies	200	200	200	200	200	10	50	2
B	Stand Tending	1	Planning/surveys/presc.	490	490	490	450	450	25	50	1
B	Stand Tending	2	Spacing	150	150	150	150	150	75	500	1
B	Stand Tending	3	Pruning	40	40	40	0	0	24	600	3
B	Stand Tending	4	Fertilizing	300	300	300	300	300	21	70	2
B	Stand Tending	5	Studies	0	0	0	0	0	0	0	9
B	Stand Tending	6	Other	0	0	0	0	0	0	0	9
C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9
C	FH Enhancement	2	Spacing	0	0	0	0	0	0	0	9
C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9
C	FH Enhancement	4	Studies	0	0	0	0	0	0	0	9
C	FH Enhancement	5	Others	0	0	0	0	0	0	0	9
D	FH Maintenance	1	Ground Surveys (ha)	1,000	560	1,000	500	500	25	25	1
D	FH Maintenance	2	Aerial Surveys (hours flying)	10/40	5/4	5/4	5/4	5/4	16	$'750/200	1
D	FH Maintenance	3	Single Tree Control	0	0	0	0	0	0	0	9
D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9
D	FH Maintenance	5	Pheromone baiting (trees)	500	500	300	300	300	11	22	1
D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9
D	FH Maintenance	7	Studies (number) Budworm	3	0	0	0	0	8	2,500	2
D	FH Maintenance	8	Other	0	0	0	0	0	0	0	9
E	Current Fire/Pest	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
E	Current Fire/Pest	2	Site preparation	0	0	0	0	0	0	0	9
E	Current Fire/Pest	3	Planting	0	0	0	0	0	0	0	9
E	Current Fire/Pest	4	Brushing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	6	Studies	0	0	0	0	0	0	0	9
E	Current Fire/Pest	7	Other	0	0	0	0	0	0	0	9
F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9
F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9
F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table Totals				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
F	Habitat Supply	5	Spacing	0	0	0	0	0	0	0	9
F	Habitat Supply	6	Pruning	0	0	0	0	0	0	0	9
F	Habitat Supply	7	Studies	0	0	0	0	0	0	0	9
F	Habitat Supply	8	Others	0	0	0	0	0	0	0	9
G	Incremental Reforestation			1,700	1,500	1,500	600	600	363	214	3
	Totals			261,995	5,475	5,280	2,800	2,800	$1,157		

District or Regional Summary Table
Prepared: Sept 7th, 1999

			Five-Year Plan Goals (ha)					Annual Plan 2000/01			
Management Unit	**Table and category**	**Activity**	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority	Regional Priority
Select this cell to paste											

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APPENDIX D: SUSTAINABLE HARVEST REPORT WILLIAMS LAKE TSA

INTERIM

RESOURCE MANAGEMENT PLAN

2000/2001

SUSTAINABLE HARVEST

Williams Lake TSA

September 30, 1999

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"Strategy at a Glance"

General Strategy

Overview of offsetting short-term falldown, improving habitat, etc.

Working Targets

1. Augment short-term harvest levels (decades 1-5), recognizing the ability of site index adjustments, genetically improved seedlings and conversion of harvested problem forest types to managed forests for significantly improving the short- and long-term harvest levels.
2. Increase the mid- and long-term harvest levels.

Product Objectives

Minimum piece size specs.

Major Silviculture Strategies

Timber Quantity

- ST harvest levels
- Increase mid- and long-term harvest levels.

Timber Quality

- Density management (planting, spacing) to ensure adequate piece size.
-

Incremental Silviculture Program

	Five-Year Plan Goals (ha)					*Annual Plan 2000/01*
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)
Backlog Activities	667,484	457,964	416,688	411,438	412,216	$3,160
Stand Tending	236,619	230,024	228,861	228,453	8,396	$4,801
Forest Health Enhanement	2,447	1,596	1,525	1,500	1,500	$658
Forest Health Maintanance	52,070	51,320	52,570	49,670	48,270	$2,623
Fire and Pest	907	92	996	218	276	$80
Habitat Supply	30	40	20	10	10	$10
Incremental Reforestation	3,150	3,150	3,450	3,470	3,470	$912
Totals	962,707	744,186	704,110	694,759	474,138	$12,244

Habitat Supply Strategy

- Maintain representative ecosystem elements that sustain habitat supply, including structural character (horizontal and vertical heterogeneity) and natural species composition.
- Maintain these elements across seral stages and ecosystems by ensuring that all incremental silviculture activities are consistent with standards to maintain or enhance habitat supply.
- Mitigate negative impacts to natural species composition and structural complexity attributes.

1.0 Basic Data

The Williams Lake Timber Supply Area (TSA) is located in a roughly middle east-west band of the Cariboo Forest Region in the central interior of British Columbia. The TSA's climate varies from generally dry and cold in the west due to the rainshadow influence of the Coast Mountains, to milder and wetter where airflow rises due to the Quesnel Highland to the east, with a very dry and warm Fraser River valley between. The area has a diverse range of ecosystems with extensive grassland areas and wetlands, and rolling topography intersected by major valleys.

From the city of Williams Lake, the TSA stretches west past the communities of Alexis Creek and Anahim Lake to Tweedsmuir Provincial Park, and east beyond Horsefly and Likely to Wells-Gray Provincial Park. The area also encompasses ten First Nations communities. The three forest districts within the TSA – Chilcotin district based in Alexis Creek, Williams Lake and Horsefly – cover 4.9 million ha with approximately 69% as productive Crown forest. Deductions to the productive forest land base, primarily due to problem forest types, bring the current harvesting landbase to 1.7 million ha, or 34% of the total landbase. The Williams Lake TSA is commonly addressed in two portions – the main TSA and the more remote three western supply blocks.

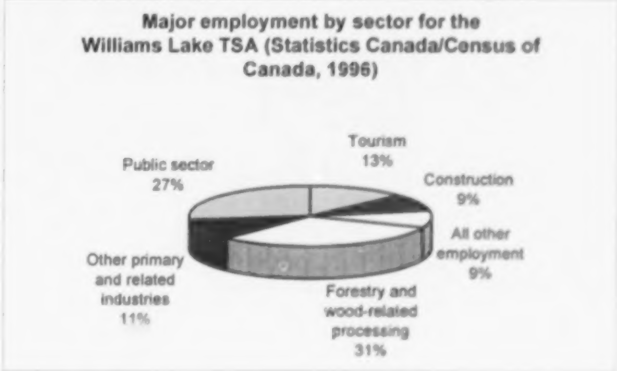

Figure 1. Major employment by sector for the Williams Lake TSA.

The allowable annual cut (AAC) has been affected for the last 20 years by outbreaks of mountain pine beetle and the need for beetle control and salvage harvesting. The current AAC of 3,807,000 m^3, set on January 1, 1996, is comprised of four components:

- Coniferous stands in the main TSA (2,500,000 m^3), with at least 100,000 m^3 annually from problem forest types
- The three western supply blocks (350,000 m^3)
- Problem forest types in Pulpwood Agreement #16 (107,000 m^3)
- Stands damaged or killed by mountain pine beetle (850,000 m^3)

The second Timber Supply Review (TSR2) is receiving public input from the August 1999 Information Report (BC Ministry of Forests, 1999b). The timber supply analysis will be available for public review in spring 2000 followed by the chief forester's revised AAC determination.

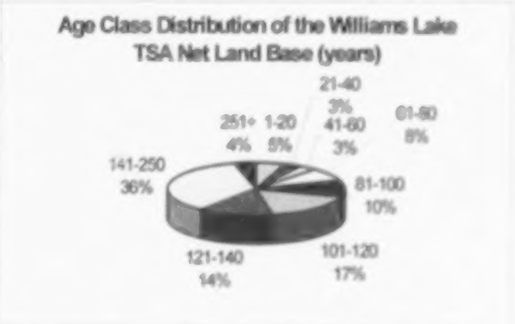

Figure 2. Age Class Distribution of the Williams Lake TSA Net Land Base.

From the *TISC Cariboo Region Stand Treatments Analysis, Williams Lake TSA* (Timberline, 1999), the base case harvest levels for the main TSA and three western supply blocks show a decrease for the next 4 decades followed by a relative rebounding to a lower level. These data are displayed below:

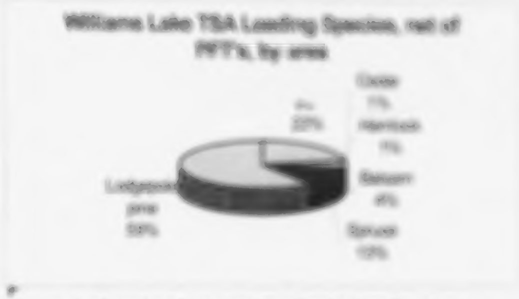

Figure 3. Species Distribution, Excluding Problem Forest Types, for the Williams Lake TSA by Area.

Decade	Base case annual harvest level (m^3)	
	Main Williams Lake TSA	3 Western Supply Blocks
1	2,670,000	425,000
2	2,399,000	381,000
3	2,156,290	341,400
4	1,935,861	315,000
5	1,861,000	315,000
6	1,861,000	315,000
7	1,861,000	315,000
8	1,861,000	315,000
9	1,861,000	315,000
10-25	1,971,000	297,000

Table 1. Base Case Annual Harvest Levels for the Williams Lake TSA, Main TSA and 3 Western Supply Blocks (Timberline, 1999).

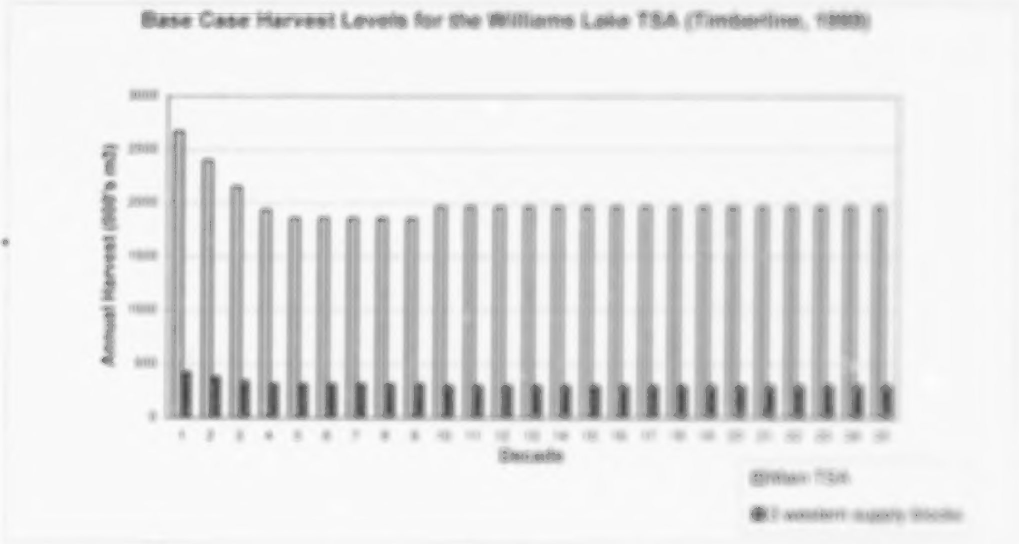

Figure 4. Base Case Harvest Levels for the Williams Lake TSA by Main TSA and 3 Western Supply Blocks (Timberline, 1999)

2.0 Issues Affecting Timber Supply

The following issues affect timber supply from the perspectives of timber quality and quantity, forest health and habitat supply. They are summarized from the TSR1 AAC rationale and TSR2 data package for the Williams Lake TSA with additional input from MELP staff.

Issue	Comments
Cariboo-Chilcotin Land Use Plan	The CCLUP was announced by government in October, 1994 and adopted by Cabinet as a Higher Level Plan with later amendment effective July 31, 1999. Management prescriptions contained in the CCLUP strategy reports have been modified by the Integration Report and are considered key information sources in Forest Development Plan direction. The TSR2 process relies on CCLUP information for the modeling of some prescriptions or constraints, which will affect long-term timber supply considerations in the RMP.
Landscape-level biodiversity	Seral stage distribution targets recommended in the *Biodiversity Conservation Strategy* will be used for achieving biodiversity objectives outlined in the CCLUP.
Stand-level biodiversity	Wildlife tree patches are planned to reduce impact on the productive forest area as much as possible.
Pulpwood Agreement #16 timber supply	107,000 m^3/year was partitioned in TSR1 for PA #16. These forest types will be segregated for TSR2.
Problem Forest Types	TSR1 included a partition of at least 100,000 m^3/year from PFT's. The new "marginal forest types" classification consists of stands likely be harvested and subsequently contributing to TSA harvest levels. Requires impact assessment regarding landscape biodiversity targets.
Mountain pine beetle salvage harvesting	New criteria for stands damaged or killed by mountain pine beetle are in use to address biodiversity objectives. Recent increases in salvage requirements, however, may affect short-term harvest levels and longer-term timber supply. A workshop is being included in the SSFM component to bring together experts and resource managers to explore alternative approaches for managing for timber and non-timber values in MPB susceptible ecosystems.
Inventory audit	A 1998 inventory audit of the TSA showed that the inventory may overestimate mature volumes by 13% for all species groups. Polygon volumes consistently overestimated in the SBS and IDF zones. Volumes in other zones may be under-estimated. TSR2 will include further review of the audit information and consideration of forest management practices.
Old Growth Site Index	Current research shows that site indices for stands older than 140 years are below actual productivity. Until regional information is available, the provincial site index adjustments will be applied as a sensitivity analysis in TSR2.
Lignum Innovative Forest Practices Agreement	The IFPA gives Lignum the opportunity to test innovative forestry practices for increasing AAC and implementing successful practices in the TSA.
Anahim Round Table consensus document	Until the ART sub-regional plan is finalized, river buffers identified in the ART document may be modeled in a sensitivity analysis.
Goal 2 protected area candidates	The remaining .25% of the TSA for designation as protected areas may be used to determine potential impact on timber supply through a sensitivity analysis.
Visually sensitive areas	Partial retention was used as the Visual Quality Objective in TSR1, but anticipated tourism pressures may find this to have overestimated the timber supply, particularly in the eastern portion of the TSA.

Issue	Comments
Wildlife habitat	Western caribou habitat requirements reduce harvesting to 35% of area, but confirmation will depend on results of research underway on partial cuts to maintain terrestrial lichens. Eastern caribou habitat is deferred from harvesting until 2008, pending the results of ongoing research on group selection systems to maintain arboreal lichens and the implementation of the caribou strategy. Mule deer winter range strategy for harvesting in the IDF allows for no harvesting on some ranges with limited selection harvesting and extended rotations on others. Grizzly bear, moose, furbearer, species at risk – implementation strategies for CCLUP requirements to manage for habitat for these species are being developed on an ongoing basis; for enhanced forestry activities, standards for maintaining habitat supply will include considerations for these species.
Riparian habitat	The inclusion of riparian reserves and management zones may reduce the productive forest land area with potential impact on the availability of mature volume for harvesting.
Green-up	The current minimum height requirement of 3 m to achieve green-up currently equates to an age of 17 – 22 years. Spruce stands may not be achieving that prediction. OGSI may calculate stands reaching 3 m in less time. The effects on long-term timber availability will be included as a high priority study in the Sustainable Harvest strategic objective.
Community dependence	As shown on page 1 under Basic Data, approximately 1/3rd of total employment in the TSA relies on the forest industry. Public input is most prominent on this socio-economic issue. Future Timber Supply Reviews and AAC determinations will need to balance timber availability with community dependence and opportunities for mitigating projected falldowns with development of alternate economic bases.

3.0 Incremental Silviculture History

The incremental silviculture program began in the Cariboo region in the late 1970's with juvenile spacing in spruce-balsam stands near Wells in the Quesnel TSA. Throughout the Cariboo region, various federal and provincial employment programs (EBAP, FWAP, etc.) through the 1980's provided funds to train people in juvenile spacing while accomplishing significant numbers of treated area. Much of this early work in the Williams Lake TSA was conducted in uneven-aged drybelt Douglas-fir stands in the central portion of the TSA and wildfire-origin lodgepole pine stands in the western part of the TSA. Monitoring of treatment results helped lead to refinement of target densities and understanding the interactions of incremental silviculture and forest health.

The initiation of the first federal-provincial FRDA (Forest Resource Development Agreement) in 1985 expanded the incremental silviculture program with later legislative changes in 1987 diverting some juvenile spacing treatments into basic silviculture requirements. FRDA I helped establish regional conifer release, fertilization and pruning programs to add to continued juvenile spacing, with some spacing and limited pruning of transition and wetbelt stands also underway in the eastern part of the TSA. FRDA II continued these trends, followed by the establishment of Forest Renewal BC in 1995, which brought socio-economic considerations to incremental silviculture programs and treatments.

Treatment	10-year average area treated/year (ha)	Treatment Cost (per ha)	
		Average	Range
Juvenile spacing	5364	$600	$300-$1000
Fertilization	281	$300	???
Pruning	62	$1000	$700-$1200

Table 2. Summary of Incremental Silviculture Area Treated and Costs for the Williams Lake TSA (ISIS data)

Incremental silviculture in the Williams Lake TSA has been undertaken to capture various benefits of juvenile spacing, including increased merchantable volume at rotation, larger and higher-valued piece size and reduced processing costs. However, for the TSR1 AAC determination, the chief forester decided that the effects of incremental silviculture up to the end of 1995 had no influence on AAC (Pedersen,, 1996).

The TSR2 timber supply analysis uses a regeneration delay of two years for planted areas and four years for natural regenerated areas under basic silviculture. Management practices that exceed this minimum requirement will improve the timber supply forecast. TSR2 does not base the timber supply on any incremental silviculture treatments.

4.0 Opportunities to Increase Timber Supply

The Cariboo Forest Region has undertaken extensive review and analysis of its long-term timber supply for the Williams Lake, Quesnel and 100 Mile House TSA's. Inter-agency committees of MOF, industry and MELP staff worked under the Timber Investment Strategy Committee (TISC) initiative from 1996 to early 1999 (CLMA, 1997; Cariboo Forest Region TISC, 1996, 1997; Timberline, 1999). The TISC reports provide the most reliable framework currently available for the Sustainable Harvest component of the Resource Management Plan.

The *Stand Treatments Analysis* report for the Williams Lake TSA (Timberline, 1999) outlines the methodology used in the timber supply analysis. FSSIM 3.0, a forest-level simulation model, predicted the development of a forest over a 250-year planning horizon based on initial forest conditions, expected patterns of growth, harvesting and regeneration rules, and assumptions for non-timber resources. A list of the analysis options with a brief description of each and its effect on timber supply follows to demonstrate the breadth of scenarios tested and examined.

Analysis Option	Description	Effect on Timber Supply
Base Case	The management assumptions, land base netdowns, general growth and yield parameters and forest cover requirements from TSR1 were used, with some minor changes to the development of analysis units to better reflect anticipated TSR2.	The indicated current harvest level of 2,670,000 m^3/year for the main TSA will decrease 30% by decade 5. A long-term harvest level of 1,971,000 m^3/year starting at decade 10 can be sustained through the remainder of the 250-year planning horizon.
Old Growth Site Index adjustments	OGSI adjustment equations, including SIBEC, were used for interior spruce and lodgepole pine to more accurately assess productivity of stands older than 140 years.	Long-term harvest gain of 22.6% for the main TSA and 8.1% for the 3 western supply blocks.
Reduced Time to Green-up	Green up period for the IRM and visual constraint areas was reduced by 3 years to 11 and 12 years, respectively, to better reflect stand treatments such as brushing and fertilization that can reduce the time for stands to reach 3 m in height.	Not specifically reported but instead incorporated with other analysis options.
Reduced Regeneration Delay	Regeneration delay for all current and backlog NSR was reduced by 2 years and to 3 years.	Reducing regeneration delay for all current NSR improves the mid- and long-term gains by 2.5%.

Analysis Option	Description	Effect on Timber Supply
Problem Forest Types	Inclusion of cedar-hemlock, balsam, wetbelt Douglas-fir, spruce and lodgepole pine PFT's, which are currently excluded from the forest land base due to low merchantability.	Only pine PFT's produced any significant effect to harvest levels. Three levels of utilization (100%, 50% and 25%) produced significant gains in both the Main TSA and 3 western supply blocks, most notably in the 3 western supply blocks where pine PFT's are predominant.
Genetically Improved Planting Stock	Tree improvement gains of 12% volume increase at rotation were used by adjusting site index with two candidate groups reviewed, lodgepole pine included and excluded.	Produces a long-term volume gain of 11.4% above base case.
Alternative Spacing Intensities	Double and triple the current estimated area juvenile spaced per year.	Long-term benefit of 1.2% - 3.5%.
Reducing Lost Productive Area from Future Roads	Reduction of lost productive area by 1% and 2% for future roads.	Long-term harvest increases of 1-2% for both the main TSA and 3 western supply blocks.
Fertilization and Spacing	Volume of all eligible lodgepole pine managed stands was increased by 15 m^3/ha at rotation to reflect gains from one fertilization treatment.	Long-term gain of 3.8% for the main TSA and no gain for the 3 western supply blocks.
Elimination of Backlog NSR	The base case scenario of 10 years to eliminate all backlog NSR (areas harvested before 1987) was reduced to 5 and 0 years.	Regenerating all backlog NSR in 5 years produces an 8% long-term gain for the main TSA and 2.5% mid-term gain for the 3 western supply blocks.
Commercial Thinning	One-pass volume recoveries of 50 m^3/ha and 70 m^3/ha for stands up to 20 years before the minimum harvest age were examined for the main TSA. This scenario improves adjacency constraints and available harvest at the minimum harvest age.	Improved timber availability in short- and mid-term by up to 43%.
Combination Scenarios	Combination scenarios were examined, such as reductions in regeneration delay combined with reduced green-up age and later commercial thinning.	Some treatment combinations can be additive, such as juvenile spacing and fertilization, but combination treatment results need further investigation.

4.1 Potential Treaments and Treatable Area Information

The *Stand Treatments Aalysis* report for the Williams Lake TSA (Timberline, 1999) lists the changes in harvest level ompared to the base case for all tested treatments and treatment regimes for the Main TSA and three western supply blocks. Timeframes of short (decades 1-4), mid (decades 5-9) and log (decade 10+) are used for analysis. The following two tables are extracted from the report

Table 3. All Analysis Results, Williams Lake Main TSA (Timberline, 1999). (Used with permission.)

Scenario	SHORT TERM								MID TERM			
	Decade1		Decade2		Decade3		Decade 4		Decades 5-			
	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change base c		
Base Case	2670	n/a	2399	n/a	2155	n/a	1936	n/a	1861	n/a		
OGSI Adjustments	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1861	0.0%	2416	22.6%
Reduced Time to Regenerate Backlog NSR	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1861	0.0		
Reduced Regen Delay Reduced by 2 yrs	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1891	1.6%	2011	2.0%
Reduced Regen Delay Reduced to 0	2670	0.0%	2399	0.0%	2155	0.0%	1946	0.5%	1946	4.6		
Utilization of Cedar PFTs	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1861	0.0%	1971	0.0%
Utilization of 25 % of Balsam PFTs	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1886	1.3		
Utilization of 50 % of Balsam PFTs	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1901	2.1%	1986	0.8%
Utilization of 100 % of Balsam PFTs	2670	0.0%	2399	0.0%	2155	0.0%	1946	0.5%	1946	4.6		
Utilization of 100% of Douglas fir PFTs	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1861	0.0%	1971	0.0%
Utilization of 25 % of Spruce PFTs	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1871	0.5		
Utilization of 50 % of Spruce PFTs	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1876	0.8%	1981	0.5%
Utilization of 100 % of Spruce PFTs	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1891	1.6		
Utilization of 25 % of Lodgepole pine PFTs	2670	0.0%	2399	0.0%	2155	0.0%	1996	3.1%	1996	7.3%	1926	-2.3%
Utilization of 50 % of Lodgepole pine PFTs	2670	0.0%	2399	0.0%	2155	0.0%	2151	11.1%	2151	15.6		
Utilization of 100 % of Lodgepole pine PFTs	2670	0.0%	2451	2.2%	2451	13.7%	2451	26.6%	2451	31.7%	2011	2.0%
Alternative Spacing Intensities 4000 ha/yr	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1861	0.0		
Alternative Spacing Intensities 12000 ha/yr	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1861	0.0%	2011	2.0%
Alternative Spacing Intensities 18000 ha/yr	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1861	0.0		
Commercial Thinning 50 m3/ha 1000 ha/yr + Reduced ages	2670	0.0%	2670	11.3%	2670	23.9%	2399	23.9%	1980	6.4%	1995 (14+)	1.2%
Commercial Thinning 50 m3/ha 2400 ha/yr + Reduced ages	2670	0.0%	2670	11.3%	2670	23.9%	2670	37.9%	2670	43.5		
Commercial Thinning 70 m3/ha 1000 ha/yr + Reduced ages	2670	0.0%	2670	11.3%	2670	23.9%	2399	23.9%	1971	5.9%	1971 (14+)	0.0%
Commercial Thinning 70 m3/ha 2400 ha/yr + Reduced ages	2670	0.0%	2670	11.3%	2670	23.9%	2670	37.9%	2670	43.5		
Commercial Thinning 70 m3/ha 1000 ha/yr + No regen delay	2670	0.0%	2670	11.3%	2670	23.9%	2399	23.9%	2066	11.0%	2066	4.8%
Road Reductions (reduced by 1%)	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1861	0.0		
Road Reductions (reduced by 2%)	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1861	0.0%	2011	2.0%
Fertilization of Managed Stands	2670	0.0%	2399	0.0%	2155	0.0%	1936	0.0%	1866	0.3		
Reduction in Minimum Harvest Ages	2670	0.0%	2399	0.0%	2155	0.0%	1951	0.8%	1951	4.8%	2066	4.8%
Genetically Improved Stock	2670	0.0%	2399	0.0%	2155	0.0%	1951	0.8%	1951	4.8		

Commercial thinning provides the most significant potential increases over base case in short-term harvest levels (decades 1-4) (11.3% – 37.9%) and 43.5% in the mid term. Since wild stand supply is currently limited, a sustained program of juvenile spacing and fertilization of young stands in the early decades is imperative for stand recruitment to achieve commercial thinning opportunities. The commercial thinning component must be maintained for eight decades if it is to make a significant contribution to harvest levels.

Table 4. All Analysis Results, Three Western Supply Blocks, Williams Lake TSA (Timberline, 1999). (Used with permission.)

	SHORT TERM						MID TERM					
	Decade1		Decade2		Decade3		Decade 4		Decades 5-9			
Scenario	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change from base case	Harvest (000's m3/ha)	Change from base case		
Base Case	425	n/a	381	n/a	341	n/a	315	n/a	315	n/a		
[illegible] Adjustments	425	0.0%	381	0.0%	341	0.0%	315	0.0%	315	0.0%	321	8.1%
Reduced Time to Regenerate Backlog NSR	425	0.0%	381	0.0%	341	0.0%	323	2.5%	323	2.5%		
Reduced Regen Delay Reduced by 2 yrs	425	0.0%	381	0.0%	341	0.0%	320	1.6%	320	1.6%	300	1.0%
Reduced Regen Delay Reduced to 0	425	0.0%	381	0.0%	341	0.0%	332	5.4%	332	5.4%		
Utilization of 25 % of Cedar PFTs	425	0.0%	381	0.0%	341	0.0%	317	0.6%	317	0.6%	299	0.7%
Utilization of 50 % of Cedar PFTs	425	0.0%	381	0.0%	341	0.0%	319	1.3%	319	1.3%		
Utilization of 100 % of Cedar PFTs	425	0.0%	381	0.0%	341	0.0%	323	2.5%	323	2.5%	303	2.0%
Utilization of 100 % of Balsam PFTs	425	0.0%	381	0.0%	341	0.0%	318	1.0%	318	1.0%		
Utilization of 25 % of Douglas fir PFTs	425	0.0%	381	0.0%	341	0.0%	317	0.6%	317	0.6%	298	0.3%
Utilization of 50 % of Douglas fir PFTs	425	0.0%	381	0.0%	341	0.0%	320	1.6%	320	1.6%		
Utilization of 100 % of Douglas fir PFTs	425	0.0%	381	0.0%	341	0.0%	325	3.2%	325	3.2%	303	2.0%
Utilization of 25 % of Spruce PFTs	425	0.0%	381	0.0%	341	0.0%	322	2.2%	322	2.2%		
Utilization of 50 % of Spruce PFTs	425	0.0%	381	0.0%	341	0.0%	328	4.1%	328	4.1%	304	2.4%
Utilization of 100 % of Spruce PFTs	425	0.0%	381	0.0%	342	0.2%	342	8.6%	342	8.6%		
Utilization of 25 % of Lodgepole pine PFTs	425	0.0%	428	12.3%	428	25.5%	428	35.9%	428	35.9%	321	8.1%
Utilization of 50 % of Lodgepole pine PFTs	540	27.1%	484	27.0%	434	27.3%	389	23.5%	367	16.5%		
Utilization of 100 % of Lodgepole pine PFTs	766	80.2%	687	80.3%	617	80.9%	554	75.9%	497	57.8%	452	52.2%
Spacing 100 % of Eligible stands	425	0.0%	381	0.0%	341	0.0%	315	0.0%	315	0.0%		
Road Reductions (reduced by 1%)	425	0.0%	381	0.0%	341	0.0%	315	0.0%	315	0.0%	300	1.0%
Road Reductions (reduced by 2%)	425	0.0%	381	0.0%	341	0.0%	315	0.0%	315	0.0%		

Volume gains of up to 80% over base case are projected in the short term and 52.2% – 57.8% in the mid and long terms, respectively, from the harvesting of all problem forest type stands. However, these gains need examination to determine considerations for timber merchantability, block access, habitat protection and connectivity, wildlife tree patches, and other operability and non-timber considerations.

4.2 Potential Strategies by Response Time Frame

For the purposes of implementing the above treatments and treatment regimes to address the timber supply decline shown in the base case, three timeframes are used. These timeframes are slightly modified from the timeframes used for the *Stand Treatments Analysis*, to better reflect timber supply trends for the Williams Lake TSA.

Short term covers decades 1-5 for the main TSA when the harvest level is successively reduced to its lowest level, and decades 1 to 4 in the 3 western supply blocks when the projected harvest level makes its most significant decline. **Mid term** serves as a transition between the short and long terms and refers to decades 6 to 10 for the Main TSA when harvest levels remain at their lowest, and decades 4 to 10 for the 3 western supply blocks when harvest level remains at an intermediate level. **Long term** refers to the long-term sustainable harvest level for the remaining timeframe in the 250-year planning horizon using the base case assumptions. Treatments that straddle two timeframes are grouped into the timeframe to which they provide the most significant effect on projected harvest level.

Term	TSA Portion	Treatment	Strategy to Improve Timber Supply
Short	Main	Commercial thin 50 – 70 m^3/ha of 1000 – 2400 ha/year and fertilize to reduce harvest age.	Produce appropriate post-spacing densities to provide suitable stands for commercial thinning in the mid-term.
		Utilization of 100% of lodgepole pine PFT's	Unrealistic scenario due to habitat protection and connectivity needs, riparian management, wildlife tree patch retention, road access. Assess actual % harvestable area.
		Partial harvest and fertilization of young mature stands.	Alleviate short-term adjacency constraints to make candidate mature stands eligible for harvest.
		Juvenile spacing and fertilization	Provide future commercial thinning opportunities by spacing and fertilizing.
	3 western supply blocks	Utilization of 100% of lodgepole pine PFT's	Unrealistic scenario due to habitat protection and connectivity needs, riparian management, wildlife tree patch retention, road access. Assess actual % harvestable area.
		Utilization of 50% of lodgepole pine PFT's	More likely to be a practical % harvestable area of PFT's.
		Utilization of 25% of lodgepole pine PFT's	May underestimate potential PFT's suitable for harvest.

Term	TSA Portion	Treatment	Strategy to Improve Timber Supply
Mid	Main	Commercial thin 50 m^3/ha of 2400 ha/year or 70 m^3/ha of 1000 ha/year and fertilize to reduce harvest age.	Ensure continuous supply of suitable spaced and/or fertilized stands for commercial thinning.
		Utilization of 100% of lodgepole pine PFT's	Unrealistic scenario due to habitat protection and connectivity needs, riparian management, wildlife tree patch retention, road access. Assess actual % harvestable area.
		Utilization of 50% of lodgepole pine PFT's	More likely to be a practical % harvestable area of PFT's.
	3 western supply blocks	Utilization of 100% of lodgepole pine PFT's	Unrealistic scenario due to habitat protection and connectivity needs, riparian management, wildlife tree patch retention, road access. Assess actual % harvestable area.
		Utilization of 50% of lodgepole pine PFT's	More likely to be a practical % harvestable area of PFT's.
		Utilization of 25% of lodgepole pine PFT's	May underestimate potential PFT's suitable for harvest.
Long	Main	OGSI adjustments	Higher site index produces minimum operable piece size earlier and makes stands eligible for harvest sooner in the short term. Incorporate SIBEC study for TSR purposes and determine SI for all managed stands.
		Genetically improved stock	Use genetically improved seedlings for areas with available seed. No volume gain will be realized until rotation, but rotation will be earlier than for conventional stands, or, regular rotation lengths produce larger piece size.
		Harvesting and regeneration of PFT's	Productive forest land base will increase from regeneration and management of PFT stands.
	3 western supply blocks	Utilization of 100% of lodgepole pine PFT's	Unrealistic scenario due to habitat protection and connectivity needs, riparian management, wildlife tree patch retention, road access. Assess actual % harvestable area. Productive forest land base will increase from regeneration and management of PFT stands.
		Utilization of 50% of lodgepole pine PFT's	More likely to be a practical % harvestable area of PFT's. Productive forest land base will increase from regeneration and management of PFT stands.

5.0 Opportunities to Improve Timber Quality

Maintaining sustainable harvest levels in the Williams Lake TSA is more a matter of timber quantity than quality with a critical need to offset the short-term decline in timber supply. This objective is the focus of the incremental silviculture program and the Sustainable Harvest plan, and is likely to continue until the timber supply falldown is resolved. Timber quality is not a predominant issue.

Nevertheless, target rotations will allow for a range of piece size objectives. During periods of severely constrained wood flow, it is expected that the average piece size will decrease near minimums of 12.5 cm *(pine??)* and 17.5 cm dbh *(other species??)*.

5.1 Potential Treatments

Density management is the most important means of offsetting the short-term harvest level decline. Through planting and juvenile spacing, second growth stands are able to reach target piece size without the threat of overcrowding and reduced stem diameter growth. Density management is therefore regarded as the most effective means of alleviating the short-term timber supply deficit while ensuring that appropriate log sizes are available at rotation.

Pruning is well documented as a treatment to improve timber quality (BC Ministry of Forests, date unknown; Barber, 1997). Other technical sources include the *Technical Background Information, Timber Enhancement Strategy* report, prepared by the Cariboo Lumber Manufacturers' Association (1997), which summarizes technical information on silviculture treatment benefits. The report lists pruning of young stands as a means to improve stem quality and log value at harvest. Stands most eligible for pruning have a high site index, developed access and close proximity to manufacturing facilities.

Operational pruning in the Williams Lake TSA to date, however, has raised concerns due to questionable cost-effectiveness and measured decreases in height growth when live branches are pruned. Consequently, pruning is expected to remain a low priority treatment for the TSA for some time.

5.2 Potential Strategies by Response Time Frame

Strategies to improve timber quality currently do not exist for the Williams Lake TSA. Once a sustained harvest level has been achieved (after decade 10), new opportunities to improve wood quality become more feasible. Some current trends relating to timber quality from the interim *Incremental Silviculture Strategy for British Columbia* (BC Ministry of Forests, 1999a) are:

- **Environmental services** provided by forests will likely increase in importance, with ensuing pressure to reduce harvests and conduct incremental silviculture treatments to enhance non-timber objectives.
- **Genetic improvement** of planted seedlings is expected to significantly increase stand volumes at rotation. [The stand treatments analysis (Timberline, 1999) showed a predicted gain of 11.4%.]

- **Multi-storied forests** will be achieved through natural regeneration and partial cutting (which would counteract any gains from genetic improvement).
- **Longer rotation ages** will achieve a relatively high proportion of premium logs.
- **Commercial thinning** will increase to maintain harvest flows [particularly important for the Williams Lake TSA] and meet silviculture objectives of increased growth on selected crop trees.
- Resolution is required on the effects of **pre-commercial thinning** on stand volume and quality.

Maintaining a diversified log profile in the long-term may not necessarily replicate the current profile and will depend on forest land objectives, management practices and evolving public expectations for Crown forests. Incremental silviculture practices will aim to improve timber supply while producing a range of products and log profiles. To some degree, the development of an incremental silviculture program to improve wood quality (eg. pruning) depends on the potential establishment of a value-added industry that requires an even flow of significant amounts of clear wood to support the necessary processing.

5.3 Timber Quality Forecast Scenarios

Owing to the above outline, no timber quality forecast scenarios are available for the Williams Lake TSA.

6.0 Habitat Supply

6.1 Background

Habitat supply relies on the maintenance of natural patterns of forest structural complexity associated with the various seral stages across the landscape. This structural complexity includes both physical attributes (snags, decadence features, coarse woody debris (CWD), multiple canopies and stand gaps) and species composition or forest community characteristics.

Natural species composition and structural character are established at the early seral stage with changes following successional patterns as the forest grows older. The structural complexity of the early seral forests tends to be moderate, due to the heterogeneity of young forests, with natural shrub and deciduous communities contributing to increased early seral complexity. Immature and mature forests have the least complexity as they often crowd out herb and shrub communities through canopy closure. Such stands are typically low in representation of decadence attributes such as snags and CWD which are important habitat features. As the forest grows old, structural complexity tends to increase as the forest canopy develops gaps from older trees dying out, and one or more understory levels from younger trees becoming established. The overall patterns of structural and species composition develop in these ecosystems based on the intensity, frequency and size of the disturbance events that initiate or maintain the stands. This, in turn, determines the time periods in which stands develop structural character and species composition .

Conservation of species composition and structural character of stands is implicit in the ecosystem-based approach to managing for biodiversity, as outlined in the Biodiversity Guidebook. This approach consists of managing for the species composition and structural patterns that are naturally associated with the main seral stages in the various ecosystems. A high priority is placed on maintaining minimum amounts of mature and old forest across the landscape, as the highest biodiversity values are associated with the diverse range of structural and species composition typically found in older forests. Current forest harvesting practices are based on shorter rotation cycles than present in natural ecosystems, resulting in much lower than natural amounts of mature and old forests being maintained across the landscape over the long term, along with much higher than natural amounts of early seral forests. Managed forests also tend to be structurally simple with altered communities, in comparison to natural representation.

6.2 Enhanced Forestry

Incremental silviculture activities, such as brushing and juvenile spacing, can greatly alter the natural species composition and structural character associated with the different seral stages. These treatments often significantly reduce early seral understory diversity (structural character and/or species composition), and the resulting impacts to habitat supply can persist through successive seral stages. Combined with the unnaturally low amounts of mature and old forests and unnaturally high amounts of early seral forests associated with current forest management practices, the potential exists for significant negative impacts to habitat supply. However, potential also exists for incremental silviculture activities to have a benign or even beneficial impact on habitat supply when planned with consideration for habitat and biodiversity conservation.

In general, the objective of enhanced forestry activities is to increase the harvestable volume of trees within a specified rotation period, either by allowing trees to grow faster or attain better timber attributes at smaller diameter or younger age, or by partial harvest partway through the rotation to remove competing stems for commercial use before they are lost to succession. Enhanced forestry activities that accomplish timber enhancement objectives but reduce structural character or species composition create a negative impact on habitat supply.

6.21 Potential Negative Impacts Associated with Incremental Silviculture

Some potential negative impacts of incremental silviculture are:

- Brushing, either manual or herbicide, removes the shrub and/or deciduous component over large portions of early seral, and consequently later successional stages, in ecosystems where these are important components of habitat supply.
- Juvenile spacing marginal pine stands eliminates a significant portion of habitat supply for small mammals and their predators (eg. snowshoe hare and lynx), and impedes wildlife movement patterns for many other species, for minimal timber benefit (often less than the cost of the spacing).
- Commercial thinning removes understory canopy layers, significantly reducing the structural (and sometimes species composition) complexity of mid, mature and old seral habitats.

6.2.2 Potential Beneficial Impacts Associated with Incremental Silviculture

Incremental silviculture can benefit habitat supply if timber objectives are properly integrated with the need to maintain stand structural character and natural species composition. Acceleration of stand development to address timber supply issues need not result in negative impacts to habitat supply if prescriptions include strategies to create or sustain representation of key attributes. The following points outline the potential planning applications for an integrated timber/habitat supply approach to incremental silviculture.

1. **Clumpy Spacing in Douglas-fir stands for Mule Deer Winter Range**
   - Develops canopy and stand attributes for snow interception, thermal cover and herb/shrub production.

2. **Forage and Cover for Bears**
   - Creating stands of variable stem density to develop cover attributes and maximize production of forage shrubs and herbs in early and late seral stages (especially relevant to habitat conservation for grizzly bear); denning and day beds associated with large trees.
   - Closed canopy forests from early through mature seral stages are typically "green deserts" for species such as bears and some furbearer species that require patchy stands with potential for vigorous production of shrub/herb communities.

3. **Caribou Habitat**
   - Closed canopy young forests are actively avoided by caribou. Such stands provide ambush cover for predators and offer little as forage due to suppression of lichen growth and herb/shrub communities. These areas also concentrate caribou to unmanaged forest patches which become increasingly small as logging progresses. This defeats predator avoidance strategies which require access to large areas of suitable habitat (lichens) to permit nomadic behavior.
   - Treatments should be designed to produce variable density stands that allow development of stand openings and typical herb/shrub communities while promoting development of lichen biomass.

4. **Riparian Restoration**
   - Treatments designed to accelerate development of coniferous and deciduous stands with typical herb/shrub communities along streams, wetlands and lakes where previous logging has removed forest cover, important riparian habitat, large trees providing shade and a source of large organic debris.

5. **Mitigation of Effects of High Equivalent Clearcut Area (ECA)**
   - Acceleration of canopy and stand attribute developement to permit faster hydrologic recovery of impacted watersheds.
   - Treatments should be designed to develop snow interception attributes as well as stand openings which will accumulate snow that is shaded from atmospheric influences. Accelerating the developement of, or emulating, old forest features will slow runoff with commensurate benefit to fish and fish habitat including water quality.

6. **Re-establishment of Natural Species Composition and Mixed Species Stands**
   - Treatments designed to permit re-establishment of typical forest communities will permit faster rehabilitation of landscapes where biodiversity targets are threatened. Impacts of previous disturbances and logging histories may be incrementally mitigated.

7. **Acceleration of Development of Stands with Appropriate Mature and Old Forest Attributes**
   - For some ecosystems, especially those managed on uneven-aged silvicultural systems, treatments may accelerate development of certain attributes that contribute to seral condition.
   - Treatments designed to accelerate development of mature and old forest may be applied strategically to re-establish habitat supply deficits resulting from short rotation forestry practices in landscapes with extensive logging history

6.3 Principles for Habitat Maintenance and Enhancement for Incremental Silviculture

For the range of enhanced forestry activities included in the Sustainable Harvest component of the Resource Management Plan , the following principles need to be applied:

1. Activities and treatments that are designed to deliver beneficial impact to habitat supply, as well as timber objectives, should be given highest investment priority.

2. The second priority for investment should be assigned to projects which intend to address timber objectives, but are designed to effectively mitigate impacts to habitat supply.

3. Activities and treatments producing negative impacts on habitat supply, and designed purely for timber enhancement, should be avoided and should be accorded last priority for investment.

4. For all activities and treatments, MELP is consolidating and developing standards to maintain or enhance habitat supply, and mitigate negative impacts to natural species composition and structural complexity attributes. As investment planning proceeds, and enhanced forestry strategies are developed by proponents, MELP will distribute guidance documents to assist with the integration of timber and habitat supply objectives. The corporate objective of MELP is to ensure that all incremental silviculture treatments are consistent with standards to address habitat supply issues.

6.4 Integration of Habitat Supply and Timber Objectives

Problem forest type (PFT) utilization and commercial thinning are ranked as high priority timber enhancement activities for this TSA, to offset the short-term timber supply problem and increase mid- and long-term timber supply. Juvenile spacing is ranked as high priority to provide future commercial thinning opportunities.

The proposed extensive utilization of PFT's needs to be assessed in terms of landscape biodiversity impacts. Due to their extensive occurrence in certain areas, such as the three western supply blocks, PFT's make up a significant portion of the older forests. Consequently, they are the only forest types available for meeting varying portions of mature and old seral targets in some landscape units (as outlined in the Biodiversity Conservation Strategy). The area of PFT's surplus to landscape biodiversity requirements needs to be assessed by landscape unit before utilization levels can be determined.

As outlined above in section 6.2, commercial thinning and juvenile spacing treatments need to be designed and directed to avoid negative impacts on structural character and species composition, and thus habitat supply. The strategy of this RMP to accomplish these objectives is twofold:

- As outlined above in section 6.3, MELP is consolidating and developing standards for commercial thinning and juvenile spacing treatments to maintain, enhance and/or mitigate negative impacts to natural species composition and structural complexity attributes.
- This RMP proposes the following studies (see Table 8):
    1. For commercial thinning – Study the magnitude of commercial thinning opportunities (ha's/yr and geographic areas) and measures to integrate habitat supply objectives.
    2. For juvenile spacing – Assess the magnitude of juvenile spacing opportunities in terms of the need to direct these treatments to areas where the treatments are both economically worthwhile (SI > 8) and beneficial or benign to habitat supply.

7.0 Working Targets

Working targets for the Williams Lake TSA are:

1. Augment short-term harvest levels (decades 1-5), recognizing the ability of site index adjustments, genetically improved seedlings and conversion of harvested problem forest types to managed forests for significantly improving the short- and long-term harvest levels.
2. Increase the mid- and long-term harvest levels.

8.0 Incremental Silviculture Program

Williams Lake TSA tables.

Williams Lake TSA
Table A: Backlog Activities
Prepared: October 4, 1999

Legal Obligations

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	1377	977	642	348	1354	$22.7	$16.49	1
2 Site preparation	34	5	0	0	0	$11.2	$329.41	1
3 Planting	64	36	5	0	0	$31.7	$495.31	1
4 Brushing	91	108	0	77	0	$40.0	$439.56	1
5 Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
6 Pruning	0	0	0	0	0	$0.0	$0.00	9
7 Seed purchase	18432	10368	1440	0	0	$4.9	$0.27	1
Totals	1566	1126	647	425	1354	$110.5	$70.56	

Backlog Reforestation

	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	12514	12354	11956	10406	10365	$419.30	33.51	1
2 Site preparation	270	200	175	75	75	$74.30	275.19	1
3 Site restoration road/land. rehab	25	0	0	0	0	$62.50	2,500.00	4
4 Planting	843	550	300	200	200	$363.30	430.96	1
5 Brushing	769	625	550	596	550	$371.10	482.57	1
6 Seed purchase	597000	397800	369000	369000	369000	$224.20	0.38	1
Totals	14421	13729	12981	11277	11190	$1,514.70	105.03	

Impeded areas

	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	8363	8205	5808	4256	4217	$265.0	$31.69	1
2 Site preparation	15	15	15	15	15	$4.5	$300.00	1
3 Planting	0	15	15	15	15	$0.0	$0.00	1
4 Brushing	2687	1706	1782	1450	1425	$1,218.3	$453.41	1
5 Seed purchase	22500	22500	22500	22500	22500	$6.8	$0.30	1
Totals	11065	9941	7620	5736	5672	$1,494.6	$135.07	

Backlog Activities - Management Unit Total

	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	22254	21536	18406	15010	15936	$707.0	$31.77	
2 Site preparation	319	220	190	90	90	$90.0	$282.13	
3 Site restoration road/land. rehab	25	0	0	0	0	$62.5	$2,500.00	
4 Planting	907	601	320	215	215	$395.0	$435.50	
5 Brushing	3547	2439	[illegible]	2123	1975	$1,629.4	$459.37	
6 Seed purchase	619500	420300	391500	391500	391500	$231.0	$0.37	
7 Max. density spacing	0	0	0	0	0	$0.0	$0.00	
8 Pruning	18432	10368	1440	0	0	$4.9	$0.27	
9 Studies	2500	2500	2500	2500	2500	$40.0	$16.00	2
Totals	667484	457964	416688	411438	412216	$3,159.8	$4.73	

Williams Lake TSA
Table B: Stand Tending Activities
Prepared: October 4, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
	Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	7901	3338	2677	2500	2596	$331.0	$41.89	2
2	Spacing	5918	4186	3884	3653	3500	$3,174.9	$536.48	2
3	Pruning	300	0	0	0	0	$297.0	$990.00	2
4	Fertilizing	2500	2500	2300	2300	2300	$778.5	$311.40	3
5	Studies (SIBEC for 4 years)	220000	220000	220000	220000	0	$220.0	$1.00	1
6	Other	0	0	0	0	0	$0.0	$0.00	9
	Totals	236619	230024	228861	228453	8396	$4,801.4	$20.29	

Williams Lake TSA
Table C: Forest Health Enhancement Activities
Prepared: October 4, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
	Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Site rehab	0	0	0	0	0	$0.0	$0.00	9
2	Spacing	1147	296	225	200	200	$448.1	$390.67	3
3	Pruning	0	0	0	0	0	$0.0	$0.00	9
4	Studies (Defoliator Monitoring)	1200	1200	1200	1200	1200	$30.0	$25.00	2
5	Root Rot Mgmt.	100	100	100	100	100	$180.0	$1,800.00	2
	Totals	2447	1596	1525	1500	1500	$658.1	$268.94	

Williams Lake TSA
Table D: Forest Health Maintenance Activities
Prepared: October 4, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities	**Units**	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Ground Surveys	ha	19800	18800	19800	17900	17000	$990.0	$50.00	1
2 Aerial Surveys	hours of flying time	120	120	120	120	120	$48.0	$400.00	1
3 Single Tree Control	trees	23400	23400	23400	23400	23400	$1,170.0	$50.00	1
4 MSMA treatment	trees	0	0	0	0	0	$0.0	$0.00	9
5 Pheromone baiting	trees	4250	4500	4750	3750	3250	$85.0	$20.00	1
6 Defoliator spraying	ha	0	0	0	0	0	$0.0	$0.00	9
7 Studies	number	0	0	0	0	0	$0.0	$0.00	9
8 Heli-log	number	4500	4500	4500	4500	4500	$330.0	$73.33	1
Totals		52070	51320	52570	49670	48270	$2,623.0	$50.4	

Williams Lake TSA
Table E: Current Fire and Pest Activities
Prepared: October 4, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	756	36	946	132	240	$15.1	$19.97	1
2 Site preparation	6	0	0	36	0	$0.9	$150.00	1
3 Planting	145	56	50	50	36	$63.8	$440.00	1
4 Brushing	0	0	0	0	0	$0.0	$0.00	9
5 Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
6 Seedling Purchase	100000	80000	80000	50000	0	$0.0	$0.00	1
7 Other	0	0	0	0	0	$0.0	$0.00	9
Totals	$907	$92	$996	$218	$276	$79.8	$87.98	

Williams Lake TSA
Table F: Habitat Supply Activities
Prepared: October 4, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0.0	$0.00	9
2 Site preparation	0	0	0	0	0	$0.0	$0.00	9
3 Planting	0	0	0	0	0	$0.0	$0.00	9
4 Brushing	0	0	0	0	0	$0.0	$0.00	9
5 Spacing	0	0	0	0	0	$0.0	$0.00	9
6 Pruning	0	0	0	0	0	$0.0	$0.00	9
7 Studies	0	0	0	0	0	$0.0	$0.00	9
8 Others (Domestic Range)	30	40	20	10	10	$9.9	$330.00	1
Totals	30	40	20	10	10	$9.9	$329.92	

Williams Lake TSA
Table G: Incremental Reforestation
Prepared: October 4, 1999

Fill planting

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	100	100	100	100	100	$4.4	$44.00	
2	Fill and Incremental Planting	0	0	100	100	100	$0.0	$500.00	
3	Brushing	0	0	0	20	20	$0.0	$400.00	
4	Seedling Purchase	0	120000	120000	120000	120000	$0.0	$0.26	
5		0	0	0	0	0	$0.0	$0.00	
	Totals	100	100	200	220	220	$4.4	$44.00	

Rehabilitation of Poorly Performing Stands

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Surveys and Prescriptions	2000	2000	2000	2000	2000	$110.0	$55.00	
2	Stand Rehabilitation	1000	1000	1000	1000	1000	$770.0	$770.00	
3	Planting	0	0	200	200	200	$0.0	$400.00	
4	Seedling Purchase		240000	240000	240000	240000	$0.0	$0.30	
5	Studies	50	50	50	50	50	$27.5	$550.00	
	Totals	3050	3050	3250	3250	3250	$907.5	$297.54	

Road, Landing, Hillslope and Riparian Reforestation

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1		0	0	0	0	0	$0.0	$0	
2		0	0	0	0	0	$0.0	0	
3		0	0	0	0	0	$0.0	0	
4		0	0	0	0	0	$0.0	0	
5		0	0	0	0	0	$0.0	0	
	Totals	0	0	0	0	0	$0.0	$0	

Incremental Reforestation - Management Unit Total

	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
	3150	3150	3450	3470	3470	$911.9	$289.49	3

5/18/2005

Williams Lake TSA
Summary Table
Prepared: October 4, 1999

Table Totals	Five-Year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Table A: Backlog Activities	667,484	457,964	416,688	411,438	412,216	3,160	5	
Table B: Stand Tending Activities	236,619	230,024	228,861	228,453	8,396	4,801	20	
Table C: Forest Health Enhancement Activities	2,447	1,596	1,525	1,500	1,500	658	269	
Table D: Forest Health Maintenance Activities	52,070	51,320	52,570	49,670	48,270	2,623	50	
Table E: Current Fire and Pest Activities	907	92	996	218	276	80	88	
Table F: Habitat Supply Activities	30	40	20	10	10	10	330	
Table G: Incremental Reforestation	3,150	3,150	3,450	3,470	3,470	912	289	
Totals of all tables	962,707	744,186	704,110	694,759	474,138	12,244	1,052	

Table and category			Activity		Five-Year Plan Goals (ha)					Annual Plan 2000/01		
					2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority
A	Backlog	Legal	1	Planning/surveys/presc.	1,377	977	642	348	1,354	23	16	1
A	Backlog	Legal	2	Site preparation	34	5	0	0	0	11	329	1
A	Backlog	Legal	3	Planting	64	36	5	0	0	32	495	1
A	Backlog	Legal	4	Brushing	91	108	0	77	0	40	440	1
A	Backlog	Legal	5	Max. density spacing	0	0	0	0	0	0	0	9
A	Backlog	Legal	6	Pruning	0	0	0	0	0	0	0	9
A	Backlog	Legal	7	Seedling Purchase	18,432	10,368	1,440	0	0	5	0	1
A	Backlog	Backlog	1	Planning/surveys/presc.	12,514	12,354	11,956	10,406	10,365	419	34	1
A	Backlog	Backlog	2	Site preparation	270	200	175	75	75	74	275	1
A	Backlog	Backlog	3	Site Restoration Road/land.	25	0	0	0	0	63	2,500	4
A	Backlog	Backlog	4	Planting	843	550	300	200	200	363	431	1
A	Backlog	Backlog	5	Brushing	769	625	550	596	550	371	483	1
A	Backlog	Backlog	6	Seedling Purchase	597,000	397,800	369,000	369,000	369,000	224	0	1
A	Backlog	Impeded	1	Planning/surveys/presc.	8,363	8,205	5,808	4,256	4,217	265	32	1

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
A	Backlog Impeded	2	Site preparation	15	15	15	15	15	5	300	1
A	Backlog Impeded	3	Planting	0	15	15	15	15	0	0	1
A	Backlog Impeded	4	Brushing	2,687	1,706	1,782	1,450	1,425	1,218	453	1
A	Backlog Impeded	5	Seed Purchase	22,500	22,500	22,500	22,500	22,500	7	0	1
A	Backlog Total	7	Studies	2,500	2,500	2,500	2,500	2,500	40	16	2
B	Stand Tending	1	Planning/surveys/presc.	7,901	3,338	2,677	2,500	2,596	331	42	2
B	Stand Tending	2	Spacing	5,918	4,186	3,884	3,653	3,500	3,175	536	2
B	Stand Tending	3	Pruning	300	0	0	0	0	297	990	2
B	Stand Tending	4	Fertilizing	2,500	2,500	2,300	2,300	2,300	779	311	3
B	Stand Tending	5	Studies (SIBEC)	220,000	220,000	220,000	220,000	0	220	1	1
B	Stand Tending	6	Other	0	0	0	0	0	0	0	9
C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9
C	FH Enhancement	2	Spacing	1,147	296	225	200	200	448	391	3
C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9
C	FH Enhancement	4	Studies	1,200	1,200	1,200	1,200	1,200	30	25	2
C	FH Enhancement	5	Others	100	100	100	100	100	180	1,800	2
D	FH Maintenance	1	Ground Surveys (ha)	19,800	18,800	19,800	17,900	17,000	990	50	1
D	FH Maintenance	2	Aerial Surveys (hours flying)	120	120	120	120	120	48	400	1
D	FH Maintenance	3	Single Tree Control	23,400	23,400	23,400	23,400	23,400	1,170	50	1
D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9
D	FH Maintenance	5	Pheromone baiting (trees)	4,250	4,500	4,750	3,750	3,250	85	20	1
D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9
D	FH Maintenance	7	Studies (number)	0	0	0	0	0	0	0	9
D	FH Maintenance	8	Heli - Log	4,500	4,500	4,500	4,500	4,500	330	73	1
E	Current Fire/Pest	1	Planning/surveys/presc.	756	36	946	132	240	15	20	1
E	Current Fire/Pest	2	Site preparation	6	0	0	36	0	1	150	1
E	Current Fire/Pest	3	Planting	145	56	50	50	36	64	440	1
E	Current Fire/Pest	4	Brushing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	6	Seedling Purchase	100,000	80,000	80,000	50,000	0	0	0	1
E	Current Fire/Pest	7	Studies	0	0	0	0	0	0	0	9
F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9
F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9
F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
F	Habitat Supply	5	Spacing	0	0	0	0	0	0	0	9
F	Habitat Supply	6	Pruning	0	0	0	0	0	0	0	9
F	Habitat Supply	7	Studies	0	0	0	0	0	0	0	9
F	Habitat Supply	8	Others	30	40	20	10	10	10	330	1
G	Incremental Reforestation			3,150	3,150	3,450	3,470	3,470	912	289	3
Totals				1,062,707	824,186	784,110	744,759	474,138	$12,244		

District or Regional Summary Table
Prepared: October 4, 1999

Management Unit	Table and category	Activity	Five-Year Plan Goals (ha) 2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Annual Plan 2000/01 Funding ($000)	Unit Cost ($)	Man. Unit Priority	Regional Priority
Williams Lake TSA	A Backlog Legal	1 Planning/surveys/presc.	1,377	977	642	348	1,354	23	16	1	0
Williams Lake TSA	A Backlog Legal	2 Site preparation	34	5	0	0	0	11	329	1	0
Williams Lake TSA	A Backlog Legal	3 Planting	64	36	5	0	0	32	495	1	0
Williams Lake TSA	A Backlog Legal	4 Brushing	91	108	0	77	0	40	440	1	0
Williams Lake TSA	A Backlog Legal	7 Seedling Purchase	18,432	10,368	1,440	0	0	5	0	1	0
Williams Lake TSA	A Backlog Backlog	1 Planning/surveys/presc.	12,514	12,354	11,956	10,406	10,365	419	34	1	0
Williams Lake TSA	A Backlog Backlog	2 Site preparation	270	200	175	75	75	74	275	1	0
Williams Lake TSA	A Backlog Backlog	4 Planting	843	550	300	200	200	363	431	1	0
Williams Lake TSA	A Backlog Backlog	5 Brushing	769	625	550	596	550	371	483	1	0
Williams Lake TSA	A Backlog Backlog	6 Seedling Purchase	597,000	397,800	369,000	369,000	369,000	224	0	1	0
Williams Lake TSA	A Backlog Impeded	1 Planning/surveys/presc.	8,363	8,205	5,808	4,256	4,217	265	32	1	0
Williams Lake TSA	A Backlog Impeded	2 Site preparation	15	15	15	15	15	5	300	1	0
Williams Lake TSA	A Backlog Impeded	3 Planting	0	15	15	15	15	0	0	1	0
Williams Lake TSA	A Backlog Impeded	4 Brushing	2,687	1,706	1,782	1,450	1,425	1,218	453	1	0
Williams Lake TSA	A Backlog Impeded	5 Seed Purchase	22,500	22,500	22,500	22,500	22,500	7	0	1	0
Williams Lake TSA	B Stand Tending	5 Studies (SIBEC)	220,000	220,000	220,000	220,000	0	220	1	1	0
Williams Lake TSA	D FH Maintenance	1 Ground Surveys (ha)	19,800	18,800	19,800	17,900	17,000	990	50	1	0
Williams Lake TSA	D FH Maintenance	2 Aerial Surveys (hours flying	120	120	120	120	120	48	400	1	0
Williams Lake TSA	D FH Maintenance	3 Single Tree Control	23,400	23,400	23,400	23,400	23,400	1,170	50	1	0
Williams Lake TSA	D FH Maintenance	5 Pheromone baiting (trees)	4,250	4,500	4,750	3,750	3,250	85	20	1	0
Williams Lake TSA	D FH Maintenance	8 Heli - Log	4,500	4,500	4,500	4,500	4,500	330	73	1	0
Williams Lake TSA	E Current Fire/Pest	1 Planning/surveys/presc.	756	36	946	132	240	15	20	1	0
Williams Lake TSA	E Current Fire/Pest	2 Site preparation	6	0	0	36	0	1	150	1	0
Williams Lake TSA	E Current Fire/Pest	3 Planting	145	56	50	50	36	64	440	1	0
Williams Lake TSA	E Current Fire/Pest	6 Seedling Purchase	100,000	80,000	80,000	50,000	0	0	0	1	0
Williams Lake TSA	F Habitat Supply	8 Others (Domestic Range)	30	40	20	10	10	10	330	1	0
Williams Lake TSA	A Backlog Total	7 Studies	2,500	2,500	2,500	2,500	2,500	40	16	2	0
Williams Lake TSA	B Stand Tending	1 Planning/surveys/presc.	7,901	3,338	2,677	2,500	2,596	331	42	2	0
Williams Lake TSA	B Stand Tending	2 Spacing	5,918	4,186	3,884	3,653	3,500	3,175	536	2	0
Williams Lake TSA	B Stand Tending	3 Pruning	300	0	0	0	0	297	990	2	0
Williams Lake TSA	C FH Enhancement	4 Studies	1,200	1,200	1,200	1,200	1,200	30	25	2	0
Williams Lake TSA	C FH Enhancement	5 Others	100	100	100	100	100	180	1,800	2	0
Williams Lake TSA	B Stand Tending	4 Fertilizing	2,500	2,500	2,300	2,300	2,300	779	311	3	0
Williams Lake TSA	C FH Enhancement	2 Spacing	1,147	296	225	200	200	448	391	3	0
Williams Lake TSA	G Incremental Reforestation		3,150	3,150	3,450	3,470	3,470	912	289	3	0
Williams Lake TSA	A Backlog Backlog	3 Site Restoration Road/land	25	0	0	0	0	63	2,500	4	0
Williams Lake TSA	A Backlog Legal	5 Max. density spacing	0	0	0	0	0	0	0	9	0
Williams Lake TSA	A Backlog Legal	6 Pruning	0	0	0	0	0	0	0	9	0
Williams Lake TSA	B Stand Tending	6 Other	0	0	0	0	0	0	0	9	0
Williams Lake TSA	C FH Enhancement	1 Site rehab	0	0	0	0	0	0	0	9	0
Williams Lake TSA	C FH Enhancement	3 Pruning	0	0	0	0	0	0	0	9	0

Williams Lake TSA	D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9	0
Williams Lake TSA	D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9	0
Williams Lake TSA	D	FH Maintenance	7	Studies (number)	0	0	0	0	0	0	0	9	0
Williams Lake TSA	E	Current Fire/Pest	4	Brushing	0	0	0	0	0	0	0	9	0
Williams Lake TSA	E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	9	0
Williams Lake TSA	E	Current Fire/Pest	7	Studies	0	0	0	0	0	0	0	9	0
Williams Lake TSA	F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9	0
Williams Lake TSA	F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9	0
Williams Lake TSA	F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9	0
Williams Lake TSA	F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9	0
Williams Lake TSA	F	Habitat Supply	5	Spacing	0	0	0	0	0	0	0	9	0
Williams Lake TSA	F	Habitat Supply	6	Pruning	0	0	0	0	0	0	0	9	0
Williams Lake TSA	F	Habitat Supply	7	Studies	0	0	0	0	0	0	0	9	0

Chilcotin Forest District
Table A: Backlog Activities
Prepared: Septempber 21, 1999

Legal Obligations

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	1377	977	642	348	1354	$22.7	$16.51	1
2	Site preparation	34	5	0	0	0	$11.2	$330.00	1
3	Planting	64	36	5	0	0	$31.7	$495.00	1
4	Brushing	91	108	0	77	0	$40.0	$440.00	1
5	Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
6	Pruning	0	0	0	0	0	$0.0	$0.00	9
7	Seedling Purchase	18432	10368	1440	0	0	$4.9	$0.26	1
	Totals	1566	1126	647	425	1354	$110.5	$70.58	

Backlog Reforestation

1	Planning/surveys/prescriptions	2514	2354	1956	406	365	$47.0	18.70	1
2	Site preparation	0	0	0	0	0	$0.0	0.00	9
3	Site restoration road/land. rehab	0	0	0	0	0	$0.0	0.00	9
4	Planting	343	100	0	0	0	$169.8	495.01	1
5	Brushing	24	0	0	46	0	$10.6	440.00	1
6	Seed purchase	98784	28800	0	0	0	$26.1	0.26	1
	Totals	2881	2454	1956	452	365	$253.4	87.97	

Impeded areas

1	Planning/surveys/prescriptions	2513	2355	1958	406	367	$47.0	$18.70	1
2	Site preparation	0	0	0	0	0	$0.0	$0.00	9
3	Planting	0	0	0	0	0	$0.0	$0.00	9
4	Brushing	987	6	182	50	25	$434.3	$440.00	1
5	Seed purchase	0	0	0	0	0	$0.0	$0.00	9
	Totals	3500	2361	2140	456	392	$481.3	$137.51	

Backlog Activities - Management Unit Total

1	Planning/surveys/prescriptions	6404	5686	4556	1160	2086	$116.7	$18	
2	Site preparation	34	5	0	0	0	$11.2	$330	
3	Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0	
4	Planting	407	136	5	0	0	$201.5	$495	
5	Brushing	1102	114	182	173	25	$484.9	$440	
6	Seed purchase	117216	39168	1440	0	0	$30.9	$0	
7	Max. density spacing	0	0	0	0	0	$0.0	$0	
8	Pruning	0	0	0	0	0	$0.0	$0	
9	Studies	0	0	0	0	0	$0.0	$0	9
	Totals	7947	5941	4743	1333	2111	$845.2	$106	

Chilcotin Forest District
Table B: Stand Tending Activities
Prepared: Septempber 21, 1999

	Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	4901	338	177	0	96	$200.0	$40.81	2
2	Spacing	1918	186	384	153	0	$1,054.9	$550.00	2
3	Pruning	0	0	0	0	0	$0.0	$0.00	9
4	Fertilizing	0	0	0	0	0	$0.0	$0.00	9
5	Studies (SIBEC)	80000	80000	80000	80000	0	$80.0	$1.00	1
6						0	$0.0	$0.00	9
	Totals	86819	80524	80561	80153	96	$1,334.9	$15.38	

Chilcotin Forest District
Table C: Forest Health Enhancement Activities
Prepared: Septempber 21, 1999

Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Site rehab	0	0	0	0	0	$0.0	$0.00	9
2 Spacing	947	96	25	0	0	$364.6	$385.01	2
3 Pruning	0	0	0	0	0	$0.0	$0.00	9
4 Studies	0	0	0	0	0	$0.0	$0.00	9
5 Others	0	0	0	0	0	$0.0	$0.00	9
Totals	947	96	25	0	0	$364.6	$385.00	

Chilcotin Forest District
Table D: Forest Health Maintenance Activities
Prepared: Septempber 21, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities	**Units**	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Ground Surveys	ha	5000	4000	5000	3100	3000	$250.0	$50.00	1
2 Aerial Surveys	hours of flying time	40	40	40	40	40	$16.0	$400.00	1
3 Single Tree Control	trees	10000	10000	10000	10000	10000	$500.0	$50.00	1
4 MSMA treatment	trees	0	0	0	0	0	$0.0	$0.00	9
5 Pheromone baiting	trees	1500	2000	2500	1000	500	$30.0	$20.00	1
6 Defoliator spraying	ha	0	0	0	0	0	$0.0	$0.00	9
7 Studies	number	0	0	0	0	0	$0.0	$0.00	9
8 Other		0	0	0	0	0	$0.0	$0.00	9
Totals		16540	16040	17540	14140	13540	$796.0	$48.13	

Chilcotin Forest District
Table E: Current Fire and Pest Activities
Prepared: Septempber 21, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
	Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	756	36	946	132	240	$15.1	$20.00	1
2	Site preparation	6	0	0	36	0	$0.9	$150.00	1
3	Planting	135	56	50	50	36	$60.8	$450.00	1
4	Brushing	0	0	0	0	0	$0.0	$0.00	9
5	Max. density spacing	0	0	0	25	0	$0.0	$0.00	2
6	Seedling Purchase	100000	80000	80000	50000	0	$26.0	$0.26	1
7	Studies	0	0	0	0	0	$0.0	$0.00	9
	Totals	897	92	996	243	276	$102.8	$114.57	

Chilcotin Forest District
Table F: Habitat Supply Activities
Prepared: Septempber 21, 1999
(Domestic Range)

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0.0	$0.00	9
2 Site preparation	0	0	0	0	0	$0.0	$0.00	9
3 Planting	0	0	0	0	0	$0.0	$0.00	9
4 Brushing	0	0	0	0	0	$0.0	$0.00	9
5 Spacing	0	0	0	0	0	$0.0	$0.00	9
6 Pruning	0	0	0	0	0	$0.0	$0.00	9
7 Studies	0	0	0	0	0	$0.0	$0.00	9
8 Others	30	40	20	10	10	$9.9	$330.00	1
Totals	30	40	20	10	10	$9.9	$329.92	

Chilcotin Forest District
Table G: Incremental Reforestation
Prepared: Septempber 21, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Fill planting								
1 Planning/surveys/prescriptions	100	100	100	100	100	$4.4	$44.00	
2 Fill and Incremental Planting	0	0	100	100	100	$0.0	$500.00	
3 Brushing	0	0	0	20	20	$0.0	$400.00	
4 Seedling Purchase	0	120000	120000	120000	120000	$0.0	$0.26	
5	0	0	0	0	0	$0.0	$0.00	
Totals	100	100	200	220	220	$4.4	$44.00	
Rehabilitation of Poorly Performing Stands								
1 Surveys and Prescriptions	1000	1000	1000	1000	1000	$55.0	$55.00	
2 Stand Rehabilitation	500	500	500	500	500	$450.5	$901.00	
3 Planting	0	0	500	500	500	$0.0	$0.00	
4 Seedling Purchase	0	600000	600000	600000	600000	$0.0	$0.00	
5 Studies	50	50	50	50	50	$27.5	$550.00	
Totals	1550	1550	2050	2050	2050	$533.0	$343.87	
Road, Landing, Hillslope and Riparian Reforestation								
1	0	0	0	0	0	$0.0	$0	
2	0	0	0	0	0	$0.0	0	
3	0	0	0	0	0	$0.0	0	
4	0	0	0	0	0	$0.0	0	
5	0	0	0	0	0	$0.0	0	
Totals	0	0	0	0	0	$0.0	$0	
Incremental Reforestation - Management Unit Total	1650	1650	2250	2270	2270	$537.4	$326	3

Chilcotin Forest District
Summary Table
Prepared: Septempber 21, 1999

Table Totals	Five-Year Plan Goals (ha) 2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Annual Plan 2000/01 Funding ($000)	Unit Cost ($)	Priority
Table A: Backlog Activities	7,947	5,941	4,743	1,333	2,111	845	106	
Table B: Stand Tending Activities	86,819	80,524	80,561	80,153	96	1,335	15	
Table C: Forest Health Enhancement Activities	947	96	25	0	0	365	385	
Table D: Forest Health Maintenance Activities	16,540	16,040	17,540	14,140	13,540	796	48	
Table E: Current Fire and Pest Activities	897	92	996	243	276	103	115	
Table F: Habitat Supply Activities	30	40	20	10	10	10	330	
Table G: Incremental Reforestation	1,650	1,650	2,250	2,270	2,270	537	326	
Totals of all tables	114,830	104,383	106,135	98,149	18,303	3,991	1,325	

Table and category			Activity		Five-Year Plan Goals (ha) 2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Annual Plan 2000/01 Funding ($000)	Unit Cost ($)	Man. Unit Priority
A	Backlog	Legal	1	Planning/surveys/presc.	1,377	977	642	348	1,354	23	17	1
A	Backlog	Legal	2	Site preparation	34	5	0	0	0	11	330	1
A	Backlog	Legal	3	Planting	64	36	5	0	0	32	495	1
A	Backlog	Legal	4	Brushing	91	108	0	77	0	40	440	1
A	Backlog	Legal	5	Seed Purchase	18,432	10,368	1,440	0	0	5	0	1
A	Backlog	Legal	6	Max. density spacing	0	0	0	0	0	0	0	9
A	Backlog	Legal	7	Pruning	0	0	0	0	0	0	0	9
A	Backlog	Backlog	1	Planning/surveys/presc.	2,514	2,354	1,956	406	365	47	19	1
A	Backlog	Backlog	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog	Backlog	3	Site Restoration Road/land.	0	0	0	0	0	0	0	9
A	Backlog	Backlog	4	Planting	343	100	0	0	0	170	495	1
A	Backlog	Backlog	5	Brushing	24	0	0	46	0	11	440	1
A	Backlog	Backlog	6	Seed Purchase	98,784	28,800	0	0	0	26	0	1
A	Backlog	Impeded	1	Planning/surveys/presc.	2,513	2,355	1,958	406	367	47	19	1

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
A	Backlog Impeded	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog Impeded	3	Planting	0	0	0	0	0	0	0	9
A	Backlog Impeded	4	Brushing	987	6	182	50	25	434	440	1
A	Backlog Impeded	5	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog Total	7	Studies	0	0	0	0	0	0	0	9
B	Stand Tending	1	Planning/surveys/presc.	4,901	338	177	0	96	200	41	2
B	Stand Tending	2	Spacing	1,918	186	384	153	0	1,055	550	2
B	Stand Tending	3	Pruning	0	0	0	0	0	0	0	9
B	Stand Tending	4	Fertilizing	0	0	0	0	0	0	0	9
B	Stand Tending	5	Other	80,000	80,000	80,000	80,000	0	80	1	1
B	Stand Tending	6	Studies (SIBEC)	0	0	0	0	0	0	0	9
C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9
C	FH Enhancement	2	Spacing	947	96	25	0	0	365	385	2
C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9
C	FH Enhancement	4	Studies	0	0	0	0	0	0	0	9
C	FH Enhancement	5	Others	0	0	0	0	0	0	0	9
D	FH Maintenance	1	Ground Surveys (ha)	5,000	4,000	5,000	3,100	3,000	250	50	1
D	FH Maintenance	2	Aerial Surveys (hours flying)	40	40	40	40	40	16	400	1
D	FH Maintenance	3	Fall & burn treatment (trees)	10,000	10,000	10,000	10,000	10,000	500	50	1
D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9
D	FH Maintenance	5	Pheromone baiting (trees)	1,500	2,000	2,500	1,000	500	30	20	1
D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9
D	FH Maintenance	7	Studies (number)	0	0	0	0	0	0	0	9
D	FH Maintenance	8	Other	0	0	0	0	0	0	0	9
E	Current Fire/Pest	1	Planning/surveys/presc.	756	36	946	132	240	15	20	1
E	Current Fire/Pest	2	Site preparation	6	0	0	36	0	1	150	1
E	Current Fire/Pest	3	Planting	135	56	50	50	36	61	450	1
E	Current Fire/Pest	4	Brushing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	5	Max. density spacing	0	0	0	25	0	0	0	2
E	Current Fire/Pest	6	Studies	100,000	80,000	80,000	50,000	0	26	0	1
E	Current Fire/Pest	7	Other	0	0	0	0	0	0	0	9
F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9
F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9
F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
F	Habitat Supply	5	Spacing	0	0	0	0	0	0	0	9
F	Habitat Supply	6	Pruning	0	0	0	0	0	0	0	9
F	Habitat Supply	7	Studies	0	0	0	0	0	0	0	9
F	Habitat Supply	8	Others	30	40	20	10	10	10	330	1
G	Incremental Reforestation			1,650	1,650	2,250	2,270	2,270	537	326	3
	Totals			233,262	194,751	187,575	148,149	18,303	$3,991		

District or Regional Summary Table
Prepared: Septempber 21, 1999

Management Unit	Table and category			Activity	Five-Year Plan Goals (ha)					Annual Plan 2000/01			
					2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority	Regional Priority
Chilcotin Forest District	A	Backlog	Legal	1 Planning/surveys/presc.	1,377	977	642	348	1,354	23	17	1	0
Chilcotin Forest District	A	Backlog	Legal	2 Site preparation	34	5	0	0	0	11	330	1	0
Chilcotin Forest District	A	Backlog	Legal	3 Planting	64	36	5	0	0	32	495	1	0
Chilcotin Forest District	A	Backlog	Legal	4 Brushing	91	108	0	77	0	40	440	1	0
Chilcotin Forest District	A	Backlog	Legal	5 Seed Purchase	18,432	10,368	1,440	0	0	5	0	1	0
Chilcotin Forest District	A	Backlog	Backlog	1 Planning/surveys/presc.	2,514	2,354	1,956	406	365	47	19	1	0
Chilcotin Forest District	A	Backlog	Backlog	4 Planting	343	100	0	0	0	170	495	1	0
Chilcotin Forest District	A	Backlog	Backlog	5 Brushing	24	0	0	46	0	11	440	1	0
Chilcotin Forest District	A	Backlog	Backlog	6 Seed Purchase	98,784	28,800	0	0	0	26	0	1	0
Chilcotin Forest District	A	Backlog	Impeded	1 Planning/surveys/presc.	2,513	2,355	1,958	406	367	47	19	1	0
Chilcotin Forest District	A	Backlog	Impeded	4 Brushing	987	6	182	50	25	434	440	1	0
Chilcotin Forest District	B	Stand Tending		6 Studies (SIBEC)	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	D	FH Maintenance		1 Ground Surveys (ha)	5,000	4,000	5,000	3,100	3,000	250	50	1	0
Chilcotin Forest District	D	FH Maintenance		2 Aerial Surveys (hours flying	40	40	40	40	40	16	400	1	0
Chilcotin Forest District	D	FH Maintenance		3 Fall & burn treatment (trees	10,000	10,000	10,000	10,000	10,000	500	50	1	0
Chilcotin Forest District	D	FH Maintenance		5 Pheromone baiting (trees)	1,500	2,000	2,500	1,000	500	30	20	1	0
Chilcotin Forest District	E	Current Fire/Pest		1 Planning/surveys/presc.	756	36	946	132	240	15	20	1	0
Chilcotin Forest District	E	Current Fire/Pest		2 Site preparation	6	0	0	36	0	1	150	1	0
Chilcotin Forest District	E	Current Fire/Pest		3 Planting	135	56	50	50	36	61	450	1	0
Chilcotin Forest District	E	Current Fire/Pest		6 Studies	100,000	80,000	80,000	50,000	0	26	0	1	0
Chilcotin Forest District	F	Habitat Supply		8 Others	30	40	20	10	10	10	330	1	0
Chilcotin Forest District	B	Stand Tending		1 Planning/surveys/presc.	4,901	338	177	0	96	200	41	2	0
Chilcotin Forest District	B	Stand Tending		2 Spacing	1,918	186	384	153	0	1,055	550	2	0
Chilcotin Forest District	C	FH Enhancement		2 Spacing	947	96	25	0	0	365	385	2	0
Chilcotin Forest District	E	Current Fire/Pest		5 Max. density spacing	0	0	0	25	0	0	0	2	0
Chilcotin Forest District	G	Incremental Reforestation			1,650	1,650	2,250	2,270	2,270	537	326	3	0
Chilcotin Forest District	A	Backlog	Legal	6 Max. density spacing	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	A	Backlog	Legal	7 Pruning	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	A	Backlog	Backlog	2 Site preparation	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	A	Backlog	Backlog	3 Site Restoration Road/land	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	A	Backlog	Impeded	2 Site preparation	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	A	Backlog	Impeded	3 Planting	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	A	Backlog	Impeded	5 Seed Purchase	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	A	Backlog	Total	7 Studies	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	B	Stand Tending		3 Pruning	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	B	Stand Tending		4 Fertilizing	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	B	Stand Tending		5 Other	80,000	80,000	80,000	80,000	0	80	1	1	0
Chilcotin Forest District	C	FH Enhancement		1 Site rehab	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	C	FH Enhancement		3 Pruning	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	C	FH Enhancement		4 Studies	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	C	FH Enhancement		5 Others	0	0	0	0	0	0	0	9	0

Chilcotin Forest District	D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	D	FH Maintenance	7	Studies (number)	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	D	FH Maintenance	8	Other	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	E	Current Fire/Pest	4	Brushing	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	E	Current Fire/Pest	7	Other	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	F	Habitat Supply	5	Spacing	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	F	Habitat Supply	6	Pruning	0	0	0	0	0	0	0	9	0
Chilcotin Forest District	F	Habitat Supply	7	Studies	0	0	0	0	0	0	0	9	0

Horsefly Forest District
Table A: Backlog Activities
Prepared: October 4, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Legal Obligations									
1	Planning/surveys/prescriptions	0	0	0	0	0	$0.0	$0.00	9
2	Site preparation	0	0	0	0	0	$0.0	$0.00	9
3	Planting	0	0	0	0	0	$0.0	$0.00	9
4	Brushing	0	0	0	0	0	$0.0	$0.00	9
5	Seed purchase	0	0	0	0	0	$0.0	$0.00	9
6	Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
7	Pruning	0	0	0	0	0	$0.0	$0.00	9
	Totals	0	0	0	0	0	$0.0	$0.00	
Backlog Reforestation									
1	Planning/surveys/prescriptions	1500	1500	1500	1500	1500	$45.00	30.00	1
2	Site preparation	100	100	100	100	100	$27.50	275.00	1
3	Site restoration road/land. rehab	25	0	0	0	0	$62.50	2,500.00	4
4	Planting	100	100	100	100	100	$50.00	500.00	1
5	Brushing	545	500	500	500	500	$272.50	500.00	1
6	Seed purchase	140000	140000	140000	140000	140000	$42.00	0.30	1
	Totals	2270	2200	2200	2200	2200	$499.50	220.04	
Impeded areas									
1	Planning/surveys/prescriptions	850	850	850	850	850	$25.5	$30.00	1
2	Site preparation	15	15	15	15	15	$4.5	$300.00	1
3	Planting	0	15	15	15	15	$0.0	$0.00	1
4	Brushing	600	600	600	600	600	$300.0	$500.00	1
5	Seed purchase	22500	22500	22500	22500	22500	$6.8	$0.30	1
	Totals	1465	1480	1480	1480	1480	$336.8	$229.90	
Backlog Activities - Management Unit Total									
1	Planning/surveys/prescriptions	2350	2350	2350	2350	2350	$70.5	$30.00	
2	Site preparation	115	115	115	115	115	$32.0	$278.26	
3	Site restoration road/land. rehab	25	0	0	0	0	$62.5	$2,500.00	
4	Planting	100	115	115	115	115	$50.0	$499.99	
5	Brushing	1145	1100	1100	1100	1100	$572.5	$500.00	
6	Seed purchase	162500	162500	162500	162500	162500	$48.8	$0.30	
7	Max. density spacing	0	0	0	0	0	$0.0	$0.00	
8	Pruning	0	0	0	0	0	$0.0	$0.00	
9	Studies	0	0	0	0	0	$0.0	$0.00	9
	Totals	166235	166180	166180	166180	166180	$836.3	$5.03	

Horsefly Forest District
Table B: Stand Tending Activities
Prepared: October 4, 1999

Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	1000	1000	1000	1000	1000	$46.0	$46.00	2
2 Spacing	1000	1000	1000	1000	1000	$800.0	$800.00	3
3 Pruning	0	0	0	0	0	$0.0	$0.00	9
4 Fertilizing	1550	1800	1800	1800	1800	$465.0	$300.00	3
5 Studies (SIBEC for 4 years)	70000	70000	70000	70000	0	$70.0	$1.00	1
6 Other	0	0	0	0	0	$0.0	$0.00	9
Totals	73550	73800	73800	73800	3800	$1,381.0	$18.78	

Horsefly Forest District
Table C: Forest Health Enhancement Activities
Prepared: October 4, 1999

Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Site rehab	0	0	0	0	0	$0.0	$0.00	9
2 Spacing	0	0	0	0	0	$0.0	$0.00	9
3 Pruning	0	0	0	0	0	$0.0	$0.00	9
4 Studies (Root Rot Management)	100	100	100	100	100	$180.0	$1,800.00	2
5 Defoliator Monitoring	1200	1200	1200	1200	1200	$30.0	$25.00	2
Totals	1300	1300	1300	1300	1300	$210.0	$161.54	

Horsefly Forest District
Table D: Forest Health Maintenance Activities
Prepared: October 4, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities	**Units**	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Ground Surveys	ha	10000	10000	10000	10000	10000	$500.0	$50.00	1
2 Aerial Surveys	hours of flying time	40	40	40	40	40	$16.0	$400.00	1
3 Single Tree Control	trees	12000	12000	12000	12000	12000	$600.0	$50.00	1
4 MSMA treatment	trees	0	0	0	0	0	$0.0	$0.00	9
5 Pheromone baiting	trees	1750	1750	1750	1750	1750	$35.0	$20.00	1
6 Defoliator spraying	ha	0	0	0	0	0	$0.0	$0.00	9
7 Studies	number	0	0	0	0	0	$0.0	$0.00	9
8 Other		0	0	0	0	0	$0.0	$0.00	9
Totals		23790	23790	23790	23790	23790	$1,151.0	$48.38	

Horsefly Forest District
Table E: Current Fire and Pest Activities
Prepared: October 4, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	0
2 Site preparation	0	0	0	0	0	0	0	0
3 Planting	0	0	0	0	0	0	0	0
4 Brushing	0	0	0	0	0	0	0	0
5 Max. density spacing	0	0	0	0	0	0	0	0
6 Studies	0	0	0	0	0	0	0	0
7 Other	0	0	0	0	0	0	0	0
Totals	$0	$0	$0	$0	$0	$0	$0	

Horsefly Forest District
Table F: Habitat Supply Activities
Prepared: October 4, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	0
2 Site preparation	0	0	0	0	0	0	0	0
3 Planting	0	0	0	0	0	0	0	0
4 Brushing	0	0	0	0	0	0	0	0
5 Spacing	0	0	0	0	0	0	0	0
6 Pruning	0	0	0	0	0	0	0	0
7 Studies	0	0	0	0	0	0	0	0
8 Others	0	0	0	0	0	0	0	0
Totals	0	0	0	0	0	$0	$0	

Horsefly Forest District
Table G: Incremental Reforestation
Prepared: October 4, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Fill planting								
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	
Totals	0	0	0	0	0	0	$0	
Rehabilitation of Poorly Performing Stands								
1	0	0	0	0	0	$0	$0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	
Totals	0	0	0	0	0	$0	$0	
Road, Landing, Hillslope and Riparian Reforestation								
1	0	0	0	0	0	$0	$0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	
Totals	0	0	0	0	0	$0	$0	
Incremental Reforestation - Management Unit Total	0	0	0	0	0	0	$0	0

Horsefly Forest District
Summary Table
Prepared: October 4, 1999

	Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table Totals	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Table A: Backlog Activities	166,235	166,180	166,180	166,180	166,180	836	5	
Table B: Stand Tending Activities	73,550	73,800	73,800	73,800	3,800	1,381	19	
Table C: Forest Health Enhancement Activities	1,300	1,300	1,300	1,300	1,300	210	162	
Table D: Forest Health Maintenance Activities	23,790	23,790	23,790	23,790	23,790	1,151	48	
Table E: Current Fire and Pest Activities	0	0	0	0	0	0	0	
Table F: Habitat Supply Activities	0	0	0	0	0	0	0	
Table G: Incremental Reforestation	0	0	0	0	0	0	0	
Totals of all tables	264,875	265,070	265,070	265,070	195,070	3,578	234	

					Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table and category			**Activity**		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority
A	Backlog	Legal	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
A	Backlog	Legal	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog	Legal	3	Planting	0	0	0	0	0	0	0	9
A	Backlog	Legal	4	Brushing	0	0	0	0	0	0	0	9
A	Backlog	Legal	5	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog	Legal	6	Max. density spacing	0	0	0	0	0	0	0	9
A	Backlog	Legal	7	Pruning	0	0	0	0	0	0	0	9
A	Backlog	Backlog	1	Planning/surveys/presc.	1,500	1,500	1,500	1,500	1,500	45	30	1
A	Backlog	Backlog	2	Site preparation	100	100	100	100	100	28	275	1
A	Backlog	Backlog	3	Site Restoration Road/land.	25	0	0	0	0	63	2,500	4
A	Backlog	Backlog	4	Planting	100	100	100	100	100	50	500	1
A	Backlog	Backlog	5	Brushing	545	500	500	500	500	273	500	1
A	Backlog	Backlog	6	Seed Purchase	140,000	140,000	140,000	140,000	140,000	42	0	1
A	Backlog	Impeded	1	Planning/surveys/presc.	850	850	850	850	850	26	30	1

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
A	Backlog Impeded	2	Site preparation	15	15	15	15	15	5	300	1
A	Backlog Impeded	3	Planting	0	15	15	15	15	0	0	1
A	Backlog Impeded	4	Brushing	600	600	600	600	600	300	500	1
A	Backlog Impeded	5	Seed Purchase	22,500	22,500	22,500	22,500	22,500	7	0	1
A	Backlog Total	7	Studies	0	0	0	0	0	0	0	9
B	Stand Tending	1	Planning/surveys/presc.	1,000	1,000	1,000	1,000	1,000	46	46	2
B	Stand Tending	2	Spacing	1,000	1,000	1,000	1,000	1,000	800	800	3
B	Stand Tending	3	Pruning	0	0	0	0	0	0	0	9
B	Stand Tending	4	Fertilizing	1,550	1,800	1,800	1,800	1,800	465	300	3
B	Stand Tending	5	Studies (SIBEC for 4 years)	70,000	70,000	70,000	70,000	0	70	1	1
B	Stand Tending	6	Other	0	0	0	0	0	0	0	9
C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9
C	FH Enhancement	2	Spacing	0	0	0	0	0	0	0	9
C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9
C	FH Enhancement	4	Studies	100	100	100	100	100	180	1,800	2
C	FH Enhancement	5	Others	1,200	1,200	1,200	1,200	1,200	30	25	2
D	FH Maintenance	1	Ground Surveys (ha)	10,000	10,000	10,000	10,000	10,000	500	50	1
D	FH Maintenance	2	Aerial Surveys (hours flying)	40	40	40	40	40	16	400	1
D	FH Maintenance	3	Fall & burn treatment (trees)	12,000	12,000	12,000	12,000	12,000	600	50	1
D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9
D	FH Maintenance	5	Pheromone baiting (trees)	1,750	1,750	1,750	1,750	1,750	35	20	1
D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9
D	FH Maintenance	7	Studies (number)	0	0	0	0	0	0	0	9
D	FH Maintenance	8	Other	0	0	0	0	0	0	0	9
E	Current Fire/Pest	1	Planning/surveys/presc.	0	0	0	0	0	0	0	0
E	Current Fire/Pest	2	Site preparation	0	0	0	0	0	0	0	0
E	Current Fire/Pest	3	Planting	0	0	0	0	0	0	0	0
E	Current Fire/Pest	4	Brushing	0	0	0	0	0	0	0	0
E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	0
E	Current Fire/Pest	6	Studies	0	0	0	0	0	0	0	0
E	Current Fire/Pest	7	Other	0	0	0	0	0	0	0	0
F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	0
F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	0
F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	0
F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	0

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
F	Habitat Supply	5	Spacing	0	0	0	0	0	0	0	0
F	Habitat Supply	6	Pruning	0	0	0	0	0	0	0	0
F	Habitat Supply	7	Studies	0	0	0	0	0	0	0	0
F	Habitat Supply	8	Others	0	0	0	0	0	0	0	0
G	Incremental Reforestation			0	0	0	0	0	0	0	0
	Totals			264,875	265,070	265,070	265,070	195,070	$3,578		

District or Regional Summary Table
Prepared: October 4, 1999

			Five-Year Plan Goals (ha)					Annual Plan 2000/01			
Management Unit	**Table and category**	**Activity**	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority	Regional Priority
Select this cell to paste											

Williams Lake Forest District
Table A: Backlog Activities
Prepared: September 21, 1999

Legal Obligations

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	9
2	Site preparation	0	0	0	0	0	0	0	9
3	Planting	0	0	0	0	0	0	0	9
4	Brushing	0	0	0	0	0	0	0	9
5	Seed purchase	0	0	0	0	0	0	0	9
6	Max. density spacing	0	0	0	0	0	0	0	9
7	Pruning	0	0	0	0	0	0	0	9
	Totals	0	0	0	0	0	0	$0	

Backlog Reforestation

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	8500	8500	8500	8500	8500	$327.3	$38.50	1
2	Site preparation	170	100	75	75	75	$46.8	$275.00	1
3	Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	9
4	Planting	400	350	200	200	200	$143.6	$358.88	1
5	Brushing	200	125	50	50	50	$88.0	$440.00	1
6	Seed purchase	358000	229000	229000	229000	229000	$156.1	$0.44	1
	Totals	9270	9075	8825	8825	8825	$761.6	$82.16	

Impeded areas

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	5000	5000	3000	3000	3000	$192.5	$38.50	1
2	Site preparation	0	0	0	0	0	$0.0	$0.00	9
3	Planting	0	0	0	0	0	$0.0	$0.00	9
4	Brushing	1100	1100	1000	800	800	$484.0	$440.00	1
5	Seed purchase	0	0	0	0	0	$0.0	$0.00	9
	Totals	6100	6100	4000	3800	3800	$676.5	$110.90	

Backlog Activities - Management Unit Total

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	13500	13500	11500	11500	11500	$519.8	$38.50	
2	Site preparation	170	100	75	75	75	$46.8	$275.00	
3	Site restoration road/land. rehab	0	0	0	0	0	$0.0	$0.00	
4	Planting	400	350	200	200	200	$143.6	$358.87	
5	Brushing	1300	1225	1050	850	850	$572.0	$440.00	
6	Seed purchase	358000	229000	229000	229000	229000	$156.1	$0.44	
7	Max. density spacing	0	0	0	0	0	$0.0	$0.00	
8	Pruning	0	0	0	0	0	$0.0	$0.00	
9	Studies	2500	2500	2500	2500	2500	$40.0	$16.00	2
	Totals	17870	17675	15325	15125	15125	$1,478.1	$82.72	

Williams Lake Forest District
Table B: Stand Tending Activities
Prepared: September 21, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	2000	2000	1500	1500	1500	$85.0	$42.50	2
2 Spacing	3000	3000	2500	2500	2500	$1,320.0	$440.00	2
3 Pruning	300	0	0	0	0	$297.0	$990.00	2
4 Fertilizing	950	700	500	500	500	$313.5	$330.00	3
5 Studies (SIBEC)	70000	70000	70000	70000	0	$70.0	$1.00	1
6 Other	0	0	0	0	0	$0.0	$0.00	9
Totals	6250	5700	4500	4500	4500	$2,085.5	$333.68	

Williams Lake Forest District
Table C: Forest Health Enhancement Activities
Prepared: September 21, 1999

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
	Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Site rehab	0	0	0	0	0	$0.0	$0.00	9
2	Spacing	200	200	200	200	200	$27.5	$137.50	3
3	Pruning	0	0	0	0	0	$0.0	$0.00	9
4	Studies	0	0	0	0	0	$0.0	$0.00	9
5	Others	0	0	0	0	0	$0.0	$0.00	9
	Totals	200	200	200	200	200	$27.5	$137.50	

Williams Lake Forest District
Table D: Forest Health Maintenance Activities
Prepared: September 21, 1999

Activities	Units	Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Ground Surveys	ha	4800	4800	4800	4800	4800	$240.0	$50.00	1
2 Aerial Surveys	hours of flying time	40	40	40	40	40	$16.0	$400.00	1
3 Single Tree Control	trees	5500	5500	5500	5500	5500	$275.0	$50.00	1
4 MSMA treatment	trees	0	0	0	0	0	$0.0	$0.00	9
5 Pheromone baiting	trees	1000	1000	1000	1000	1000	$20.0	$20.00	1
6 Defoliator spraying	ha	0	0	0	0	0	$0.0	$0.00	9
7 Studies	number	0	0	0	0	0	$0.0	$0.00	9
8 Other (Heli-Log)		4500	4500	4500	4500	4500	$330.0	$73.33	1
Totals		15840	15840	15840	15840	15840	$881.0	$55.62	

Williams Lake Forest District
Table E: Current Fire and Pest Activities
Prepared: September 21, 1999

	Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	0	0	0	0	0	$0.0	$0.00	9
2	Site preparation	0	0	0	0	0	$0.0	$0.00	9
3	Planting	10	0	0	0	0	$3.0	$300.00	1
4	Brushing	0	0	0	0	0	$0.0	$0.00	9
5	Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
6	Studies	0	0	0	0	0	$0.0	$0.00	9
7	Other	0	0	0	0	0	$0.0	$0.00	9
	Totals	$10	$0	$0	$0	$0	$3.0	$299.82	

Williams Lake Forest District
Table F: Habitat Supply Activities
Prepared: September 21, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	9
2 Site preparation	0	0	0	0	0	0	0	9
3 Planting	0	0	0	0	0	0	0	9
4 Brushing	0	0	0	0	0	0	0	9
5 Spacing	0	0	0	0	0	0	0	9
6 Pruning	0	0	0	0	0	0	0	9
7 Studies	0	0	0	0	0	0	0	9
8 Others	0	0	0	0	0	0	0	9
Totals	0	0	0	0	0	$0	$0	

Williams Lake Forest District
Table G: Incremental Reforestation
Prepared: September 21, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Fill planting								
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	
Totals	0	0	0	0	0	0	$0	
Rehabilitation of Poorly Performing Stands								
1 Surveys and Prescriptions	1000	1000	1000	1000	1000	$55.0	$55.00	
2 Stand Rehabilitation	500	500	500	500	500	$450.5	$901.00	
3 Planting	0	0	500	500	500	$0.0	$0.00	
4 Seedling Purchase	0	600000	600000	600000	600000	$0.0	$0.00	
5 Studies	50	50	50	50	50	$27.5	$550.00	
Totals	1550	1550	2050	2050	2050	$533.0	$0.34	
Road, Landing, Hillslope and Riparian Reforestation								
1	0	0	0	0	0	$0	$0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	
Totals	0	0	0	0	0	$0	$0	
Incremental Reforestation - Management Unit Total	1550	1550	2050	2050	2050	533.0	343.87	3

Williams Lake Forest District
Summary Table
Prepared: September 21, 1999

	Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table Totals	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Table A: Backlog Activities	17,870	17,675	15,325	15,125	15,125	1,478	83	
Table B: Stand Tending Activities	6,250	5,700	4,500	4,500	4,500	2,086	334	
Table C: Forest Health Enhancement Activities	200	200	200	200	200	28	137	
Table D: Forest Health Maintenance Activities	15,840	15,840	15,840	15,840	15,840	881	56	
Table E: Current Fire and Pest Activities	10	0	0	0	0	3	300	
Table F: Habitat Supply Activities	0	0	0	0	0	0	0	
Table G: Incremental Reforestation	1,550	1,550	2,050	2,050	2,050	533	344	
Totals of all tables	41,720	40,965	37,915	37,715	37,715	5,008	1,253	

					Five-Year Plan Goals (ha)					Annual Plan 2000/01		
Table and category			**Activity**		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority
A	Backlog	Legal	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
A	Backlog	Legal	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog	Legal	3	Planting	0	0	0	0	0	0	0	9
A	Backlog	Legal	4	Brushing	0	0	0	0	0	0	0	9
A	Backlog	Legal	5	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog	Legal	6	Max. density spacing	0	0	0	0	0	0	0	9
A	Backlog	Legal	7	Pruning	0	0	0	0	0	0	0	9
A	Backlog	Backlog	1	Planning/surveys/presc.	8,500	8,500	8,500	8,500	8,500	327	39	1
A	Backlog	Backlog	2	Site preparation	170	100	75	75	75	47	275	1
A	Backlog	Backlog	3	Site Restoration Road/land.	0	0	0	0	0	0	0	9
A	Backlog	Backlog	4	Planting	400	350	200	200	200	144	359	1
A	Backlog	Backlog	5	Brushing	200	125	50	50	50	88	440	1
A	Backlog	Backlog	6	Seed Purchase	358,000	229,000	229,000	229,000	229,000	156	0	1
A	Backlog	Impeded	1	Planning/surveys/presc.	5,000	5,000	3,000	3,000	3,000	193	39	1

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
A	Backlog Impeded	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog Impeded	3	Planting	0	0	0	0	0	0	0	9
A	Backlog Impeded	4	Brushing	1,100	1,100	1,000	800	800	484	440	1
A	Backlog Impeded	5	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog Total	7	Studies	2,500	2,500	2,500	2,500	2,500	40	16	2
B	Stand Tending	1	Planning/surveys/presc.	2,000	2,000	1,500	1,500	1,500	85	43	2
B	Stand Tending	2	Spacing	3,000	3,000	2,500	2,500	2,500	1,320	440	2
B	Stand Tending	3	Pruning	300	0	0	0	0	297	990	2
B	Stand Tending	4	Fertilizing	950	700	500	500	500	314	330	3
B	Stand Tending	5	Studies (SIBEC)	70,000	70,000	70,000	70,000	0	70	1	1
B	Stand Tending	6	Other	0	0	0	0	0	0	0	9
C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9
C	FH Enhancement	2	Spacing	200	200	200	200	200	28	138	3
C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9
C	FH Enhancement	4	Studies	0	0	0	0	0	0	0	9
C	FH Enhancement	5	Others	0	0	0	0	0	0	0	9
D	FH Maintenance	1	Ground Surveys (ha)	4,800	4,800	4,800	4,800	4,800	240	50	1
D	FH Maintenance	2	Aerial Surveys (hours flying	40	40	40	40	40	16	400	1
D	FH Maintenance	3	Fall & burn treatment (trees	5,500	5,500	5,500	5,500	5,500	275	50	1
D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9
D	FH Maintenance	5	Pheromone baiting (trees)	1,000	1,000	1,000	1,000	1,000	20	20	1
D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9
D	FH Maintenance	7	Studies (number)	0	0	0	0	0	0	0	9
D	FH Maintenance	8	Other	4,500	4,500	4,500	4,500	4,500	330	73	1
E	Current Fire/Pest	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
E	Current Fire/Pest	2	Site preparation	0	0	0	0	0	0	0	9
E	Current Fire/Pest	3	Planting	10	0	0	0	0	3	300	1
E	Current Fire/Pest	4	Brushing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	6	Studies	0	0	0	0	0	0	0	9
E	Current Fire/Pest	7	Other	0	0	0	0	0	0	0	9
F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9
F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9
F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9

Table Totals

			Five-Year Plan Goals (ha)					Annual Plan 2000/01		
			2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
F	Habitat Supply	5 Spacing	0	0	0	0	0	0	0	9
F	Habitat Supply	6 Pruning	0	0	0	0	0	0	0	9
F	Habitat Supply	7 Studies	0	0	0	0	0	0	0	9
F	Habitat Supply	8 Others	0	0	0	0	0	0	0	9
G	Incremental Reforestation		1,550	1,550	2,050	2,050	2,050	533	344	3
Totals			111,720	110,965	107,915	107,715	37,715	$5,008.1		

District or Regional Summary Table
Prepared: September 21, 1999

Management Unit	Table and category			Activity		Five-Year Plan Goals (ha)					Annual Plan 2000/01			
						2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority	Regional Priority
Williams Lake Forest District	A	Backlog	Backlog	1	Planning/surveys/presc.	8,500	8,500	8,500	8,500	8,500	327	39	1	0
Williams Lake Forest District	A	Backlog	Backlog	2	Site preparation	170	100	75	75	75	47	275	1	0
Williams Lake Forest District	A	Backlog	Backlog	4	Planting	400	350	200	200	200	144	359	1	0
Williams Lake Forest District	A	Backlog	Backlog	5	Brushing	200	125	50	50	50	88	440	1	0
Williams Lake Forest District	A	Backlog	Backlog	6	Seed Purchase	358,000	229,000	229,000	229,000	229,000	156	0	1	0
Williams Lake Forest District	A	Backlog	Impeded	1	Planning/surveys/presc.	5,000	5,000	3,000	3,000	3,000	193	39	1	0
Williams Lake Forest District	A	Backlog	Impeded	4	Brushing	1,100	1,100	1,000	800	800	484	440	1	0
Williams Lake Forest District	B	Stand Tending		5	Studies (SIBEC)	70,000	70,000	70,000	70,000	0	70	1	1	0
Williams Lake Forest District	D	FH Maintenance		1	Ground Surveys (ha)	4,800	4,800	4,800	4,800	4,800	240	50	1	0
Williams Lake Forest District	D	FH Maintenance		2	Aerial Surveys (hours flying	40	40	40	40	40	16	400	1	0
Williams Lake Forest District	D	FH Maintenance		3	Fall & burn treatment (trees	5,500	5,500	5,500	5,500	5,500	275	50	1	0
Williams Lake Forest District	D	FH Maintenance		5	Pheromone baiting (trees)	1,000	1,000	1,000	1,000	1,000	20	20	1	0
Williams Lake Forest District	D	FH Maintenance		8	Other	4,500	4,500	4,500	4,500	4,500	330	73	1	0
Williams Lake Forest District	E	Current Fire/Pest		3	Planting	10	0	0	0	0	3	300	1	0
Williams Lake Forest District	A	Backlog	Total	7	Studies	2,500	2,500	2,500	2,500	2,500	40	16	2	0
Williams Lake Forest District	B	Stand Tending		1	Planning/surveys/presc.	2,000	2,000	1,500	1,500	1,500	85	43	2	0
Williams Lake Forest District	B	Stand Tending		2	Spacing	3,000	3,000	2,500	2,500	2,500	1,320	440	2	0
Williams Lake Forest District	B	Stand Tending		3	Pruning	300	0	0	0	0	297	990	2	0
Williams Lake Forest District	B	Stand Tending		4	Fertilizing	950	700	500	500	500	314	330	3	0
Williams Lake Forest District	C	FH Enhancement		2	Spacing	200	200	200	200	200	28	138	3	0
Williams Lake Forest District	A	Backlog	Legal	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Legal	2	Site preparation	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Legal	3	Planting	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Legal	4	Brushing	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Legal	5	Seed Purchase	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Legal	6	Max. density spacing	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Legal	7	Pruning	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Backlog	3	Site Restoration Road/land	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Impeded	2	Site preparation	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Impeded	3	Planting	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	A	Backlog	Impeded	5	Seed Purchase	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	B	Stand Tending		6	Other	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	C	FH Enhancement		1	Site rehab	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	C	FH Enhancement		3	Pruning	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	C	FH Enhancement		4	Studies	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	C	FH Enhancement		5	Others	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	D	FH Maintenance		4	MSMA treatment (trees)	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	D	FH Maintenance		6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	D	FH Maintenance		7	Studies (number)	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	E	Current Fire/Pest		1	Planning/surveys/presc.	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	E	Current Fire/Pest		2	Site preparation	0	0	0	0	0	0	0	9	0

Williams Lake Forest District	E	Current Fire/Pest	4 Brushing	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	E	Current Fire/Pest	5 Max. density spacing	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	E	Current Fire/Pest	6 Studies	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	E	Current Fire/Pest	7 Other	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	F	Habitat Supply	1 Planning/surveys/presc.	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	F	Habitat Supply	2 Site preparation	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	F	Habitat Supply	3 Planting	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	F	Habitat Supply	4 Brushing	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	F	Habitat Supply	5 Spacing	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	F	Habitat Supply	6 Pruning	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	F	Habitat Supply	7 Studies	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	F	Habitat Supply	8 Others	0	0	0	0	0	0	0	9	0
Williams Lake Forest District	G	Incremental Reforestation		1,550	1,550	2,050	2,050	2,050	533	344	3	0

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Appendix 1 Resource Management Plan Spreadsheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Treatment	STor LT	Area	Cost/ha	Annual Spending Year 1	year 2	Year 3	Year 4	Year 5	Annual m3 Gain based on MAI of 2m3/ha/yr	Gain over TSR basecase*	Absolute Potential Gain at rotation	Cost of gain (incl. of TSR) /m3 (gain calc.over 80yr rotation)	Priority class. for 2000-1	Comments
2	**Surveys**														Needed to identify the SR areas and for Site index and site occupancy gains. Includes backlog and free growing assessments
3	Stocking	LT	15000	$ 30	$ 450,000	$ 450,000	$ 450,000	$ 450,000	$ 450,000					1	
4	Backlog NSR identified as SR	LT	0	$ 30	$ -	$ -	$ -	$ -	$ -	0	0	0	$ -	1	
5	Site Occupancy	LT	15000	$ 2	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	1,500	120,000	120,000	$ 0.25	1	Paper gain only. Cost incremental when doing other surveys. Gain estimated at 5% of survey area
6	SIBEC study (for 3 years)	LT			$ 250,000	$ 250,000	$ 250,000	$ 250,000							For 4 years Gain shown below
7	Site index	LT	15000	$ 1	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	480,000	480,000	480,000	$ 2.30	1	Paper gain only. Cost incremental when doing other surveys. Estimated 22% gain from TISC. Not realized until the 8th or 9th decade. Additional site index plots are established at free growing to confirm numbers
8															
9	**Backlog**														
10	Site prep / Sowing request	LT	400	$ 700	$ 280,000	$ 280,000	$ 280,000	$ 280,000	$ 280,000			0			
11	Planting	LT	400	$ [illegible]	$ 386,000	$ 386,000	$ 386,000	$ 386,000	$ 386,000	800	64,000	64,000	$ 11.16	1	Estimated to plant all NSR backlog over10 years. TISC indicated gain was negligable due to small amount of area. No benefit from eliminating in 5 years
12	Legal Brushing	LT	20	$ 500	$ 10,000	$ 20,000	$ 30,000	$ 40,000	$ 40,000						
13	Impeded Stands Brushing	LT	3250	$ 500	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 1,625,000	$ 1,625,000						
14	TP, SMP	LT	400	$ 70	$ 28,000	$ 28,000	$ 28,000	$ 28,000	$ 28,000						
15															
16	Maintenance of investment	ST	4000	$ 10	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000						Protection of investment to the end of the rotation
17	**Genetic Gain**	LT	300	$ 32	$ 9,600	$ 9,600	$ 9,600	$ 9,600	$ 9,600	178	0	14,240	$ 0.67	2	Where improved seed available - already factored into TSR calculations 12% of 100 ha
18															
19	**Density Management**														
20	TP, SMP	ST	6000	$ 70	$ 420,000	$ 420,000	$ 420,000	$ 420,000	$ 420,000						
21	Juvenile Spacing / Sanitation / Layer 3	ST	6000	$ 550	$ 3,300,000	$ 3,300,000	$ 3,300,000	$ 3,300,000	$ 3,300,000	90,000		2,700,000	$ 1.38	2	Historic levels, 5% gain on treated areas starting in the 5th decade. Stands over 10 000 stems and all free-growing stands over 5000 stems. Gain recognized as being required to achieve the TSR basecase
22															
23	**Fertilization**	LT	2500	$ 300	$ 750,000	$ 750,000	$ 750,000	$ 750,000	$ 750,000	625	50,000	50,000	$ 15.50	3	Stands on high sites targeted for CT only, assume 20 m3/ha gain at end of rotation from a single fertilizer application
24	TP, SMP	LT	2500	$ 70	$ 175,000	$ 175,000	$ 175,000	$ 175,000	$ 175,000						
25															
26	**Incremental Planting**	LT	200	$ 600	$ 120,000	$ 120,000	$ 120,000	$ 120,000	$ 120,000	20	1,600	1,600	$ 83.75	4	Assume increase stocking by 5%
27	TP, SMP	LT	200	$ 70	$ 14,000	$ 14,000	$ 14,000	$ 14,000	$ 14,000						
28	**Roads & Landing Rehab**	LT	200	$ 2,800	$ 560,000	$ 560,000	$ 560,000	$ 560,000	$ 560,000	400	32,000	32,000	$ 16.08	5	Returning land to productive state -but only includes recontouring ($2000/ha)and planting cost not any other treatment. Unlikely to be this low cost except in selected sites
29	TP, SMP	LT	200	$ 70	$ 14,000	$ 14,000	$ 14,000	$ 14,000	$ 14,000					5	No volume, measured in value $/m3
30	**Pruning**														
31															
32	**Forest Health**														
33	**Immature**														
34	Defoliator Monitoring	ST	1200	$ 25	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	4,800	?	384,000	$ 0.08	1	Managed stands at risk, assume 20% loss in growth if not treated
35	Root Rot Management	LT	100	$ 1,800	$ 180,000	$ 180,000	$ 180,000	$ 180,000	$ 180,000	225	?	18,000	$ 13.13	2	
36	TP, SMP	LT	100	$ 300	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000						
37	Pine Rehabilitation	LT													
38	Surveys	LT	2000	$ 50	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000						
39	Prescriptions	LT	1000	$ 70	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000						
40	Rehab Treatment	LT	1000	$ 773	$ 773,000	$ 773,000	$ 773,000	$ 773,000	$ 773,000						
41	Sowing and Planting	LT	1000	$ 680		$ 680,000	$ 680,000	$ 680,000	$ 680,000						
42															
43	**Mature Forest - Bark Beetles**														
44	Aerial Overview Survey	ST			$ 90,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000					1	Required to identify outbreaks
45	Trap Tree and Bait	ST			$ 85,000	$ 85,000	$ 85,000	$ 85,000	$ 85,000				$ -	1	Volume protected from damage. Includes 2000 baits, placement and survey
46	Single tree control / Fall and Burn	ST			$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,500,000						10000 trees
47	Ground surveys	ST			$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000					1	25c/m for survey 1400 km
48															

*NB. TSR is based on the assumption that :backlog will be eliminated over 10 years,
Forest Health programmes will function and keep losses to x%
and genetically improved stock will be planted where available.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Treatment	STor LT	Area	Cost/ha	Annual Spending Year 1	year 2	Year 3	Year 4	Year 5	Annual m3 Gain based on MAI of 2m3/ha/yr	Gain over TSR basecase*	Absolute Potential Gain at rotation	Cost of gain (incl. of TSR) /m3 (gain calc.over 80yr rotation)	Priority class. for [illegible]	Comments
49	**Remedial Treatment = Current Fire and Pests**														
50	**Budworm Damaged stands**														
51	Surveys			$ 25	$ -	$ -	$ -	$ -	$ -	1,600		128,000		2	
52	Prescriptions			$ 100	$ -	$ -	$ -	$ -	$ -					2	
53	Sowing Requests			$ 400	$ -	$ -	$ -	$ -	$ -					2	
54	Slash and Site Prep			$ 250	$ -	$ -	$ -	$ -	$ -					2	
55	Planting			$ 550	$ -	$ -	$ -	$ -	$ -	400		32,000		1	
56	Brushing			$ 500	$ -	$ -	$ -	$ -	$ -					1	
57															
58	**Rehab**														
59															
60															
61															
62															
63	**Total of all activities**	-	-	-	**$ 12,244,600**	**$ 12,914,600**	**$ 12,924,600**	**$ 12,934,600**	**$ 12,684,690**	**568,523**	**735,600**	**4,009,840**	**$ 3.05**		
64															

***NB. TSR is based on the assumption that :backlog will be eliminated over 10 years.**
Forest Health programmes will function and keep losses to x%
and genetically improved stock will be planted where available.

APPENDIX E: SUSTAINABLE HARVEST REPORT
100 MILE HOUSE TSA

INTERIM

RESOURCE MANAGEMENT PLAN

2000/2001

SUSTAINABLE HARVEST

100 Mile House TSA
September 30, 1999

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"Strategy at a Glance"

General Strategy	*Overview of offsetting short-term falldown, improving habitat, etc.*
Working Targets	1. Augment short-term harvest levels (decades 3-6), recognizing the ability of site index adjustments, improving regeneration delay, and treatments that reduce minimum harvest ages for managed stands and/or increase the volume associated with those stands for significantly improving the short- and long-term harvest levels. 2. Increase the mid- and long-term harvest level (decades 3-6 and 13-15).
Product Objectives	There are currently no defined product objectives for the 100 Mile House TSA beyond the minimum piece size objectives of 12.5 cm for pine and 17.5 cm for other species.
Major Silviculture Strategies	**Timber Quantity** • Increase mid- and long-term harvest levels. **Timber Quality** • Density management (planting, spacing) to ensure adequate piece size in minimum feasible timeframe. •

Incremental Silviculture Program		*Five-Year Plan Goals (ha)*					*Annual Plan 2000/01*
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)
	Backlog Activities	278,670	278,720	278,770	278,820	278,870	$1,879
	Stand Tending	108,000	108,000	108,000	108,000	8,000	$2,178
	Forest Health Enhancement	12,050	12,050	12,050	12,050	12,050	$446
	Forest Health Maintenance	19,500	19,500	19,500	19,500	19,500	$1,000
	Fire and Pest	1,200	1,420	1,420	1,420	1,420	$175
	Habitat Supply	0	0	0	0	0	0
	Incremental Reforestation	200	400	400	400	400	$103
	Totals	419,620	420,090	420,140	420,190	320,240	$5,781

Habitat Supply Strategy •	• Maintain representative ecosystem elements that sustain habitat supply, including structural character (horizontal and vertical heterogeneity) and natural species composition. • Maintain these elements across seral stages and ecosystems by ensuring that all incremental silviculture activities are consistent with standards to maintain or enhance habitat supply. • Mitigate negative impacts to natural species composition and structural complexity attributes.

1.0 Basic Data

The 100 Mile House Timber Supply Area (TSA) is the most southern of the three TSA's in the Cariboo Forest Region, located in the central interior of British Columbia. The area occupies a section of the Fraser Basin and Interior Plateau between the Fraser River and Quesnel Highland to the east (BC Ministry of Forests, no date). The TSA's climate is dry and cold in the west due to the rainshadow influence of the Coast Mountains, and milder and wetter where airflow rises to the east, with a very dry and warm Fraser River valley bisecting the TSA. Extensive grassland and wetland areas and rolling topography are other key features of the area.

The predominant community in the 100 Mile House Timber Supply Area is the regional municipality of 100 Mile House, with the village of Clinton located in the south end of the TSA. The TSA extends east and west of these central communities located on Highway 97. Wells-Gray Provincial Park forms part of the TSA's eastern boundary and the western boundary is the Fraser River. There are two First Nations Bands and one association which reside primarily in the TSA, the Canim Lake and High Bar Bands. Another eight Bands have territorial claims to the area. The TSA covers 1.2 million ha with approximately 77% as productive Crown forest (BC Ministry of Forests, 1996). Deductions to the productive forest landbase reduce the current harvesting landbase to 718,429 ha, or 59% of the total landbase.

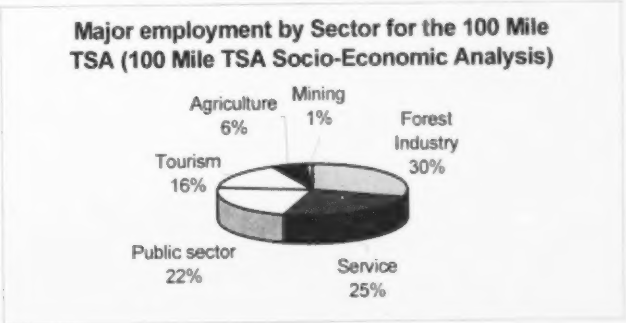

Figure 1. Major employment by sector for the 100 Mile House.

The allowable annual cut (AAC) has been affected for the last 20 years by outbreaks of mountain pine beetle and the need for beetle control and salvage harvesting. The current AAC of 1,237,000 m^3, set on January 1, 1994, is comprised of four components:

- TSA clearcut
- Drybelt Douglas-fir selection harvesting
- Mule Deer Winter Range (MDWR) selection harvesting
- Pulpwood Agreement #16 (PA16)

The second Timber Supply Review (TSR2) is in the process of being compiled in the 100 Mile District, but it is not yet ready for public review.

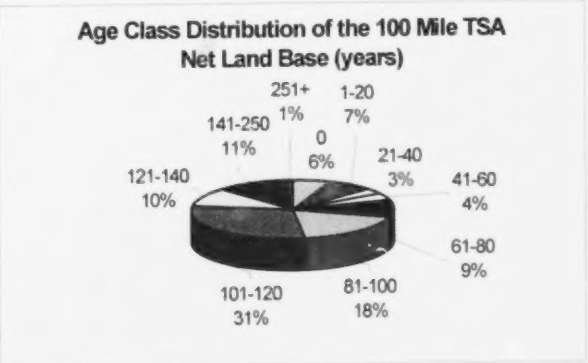

Figure 2. Age Class Distribution of the 100 Mile House TSA.

The harvest schedule used by Timberline (1998) for the *Stand Treatments Analysis* initially examined various timber harvest flow alternatives. An "even flow" schedule was selected to provide the optimal supply of timber over the long term. The total annual harvest levels incorporate an even flow clearcut portion of 1,291,000 m^3 and a Pulpwood Agreement 16 cut of 112,000 m^3 annually for the entire 250-year planning horizon. This, in combination with the fluctuating contribution of selection harvest from drybelt Douglas-fir and mule deer winter range yields a projected annual harvest of approximately 1.6 million m^3. These data are displayed below.

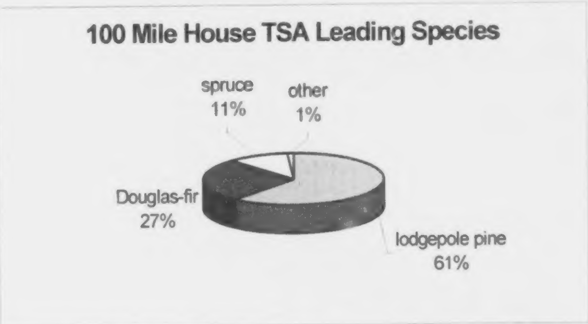

Figure 3. Leading Conifer Species for the 100 Mile House TSA.

Decade	Total Harvest (m^3)*
1	1,604,100
2	1,571,910
3	1,599,896
4	1,549,954
5	1,515,730
6	1,557,045
7	1,583,167
8	1,580,065
9	1,557,119
10	1,573,054
11	1,568,997
12	1,604,100
13	1,604,100
14	1,604,100
15	1,604,100
16	1,604,100
17	1,604,100
18	1,604,100
19	1,604,100
20	1,604,100
21	1,595,000
22	1,600,386
23	1,586,468
24	1,586,284
25	1,600,962

Table 1. Base Case Annual Harvest Levels for the 100 Mile House TSA (Timberline, 1998).

* Includes TSA clearcut (even flow), drybelt Douglas-fir and mule deer winter selection harvest, and PA 16.

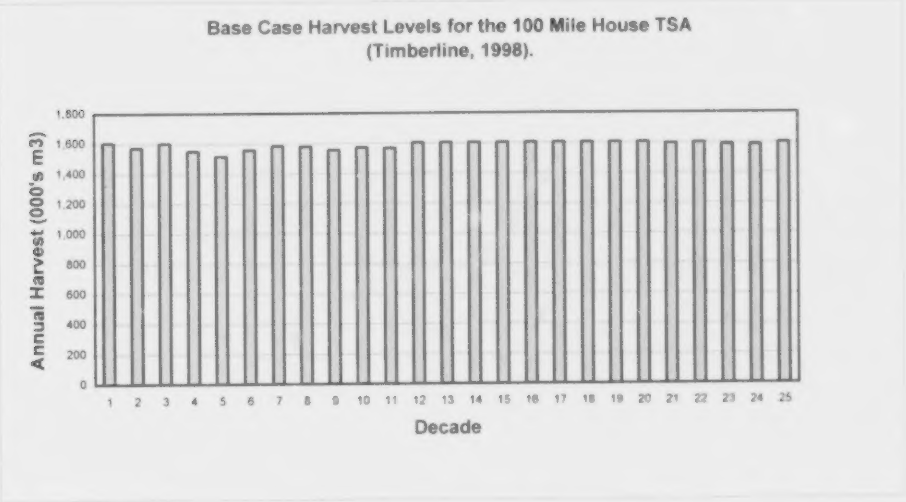

Figure 4. Base Case Harvest Levels for the 100 Mile House TSA (Timberline, 1998).

2.0 Issues Affecting Timber Supply

The following issues affect timber supply from the perspectives of timber quality and quantity, forest health and habitat supply. They are summarized from the TSR1 AAC rationale and TSR2 data package for the 100 Mile TSA with additional input from MELP staff.

Issue	Comments
Cariboo-Chilcotin Land Use Plan	The CCLUP was announced by government in October, 1994 and adopted by Cabinet as a Higher Level Plan with later amendment effective July 31, 1999. Management prescriptions contained in the CCLUP strategy reports have been modified by the Integration Report and are considered key information sources in Forest Development Plan direction. The TSR2 process relies on CCLUP information for the modeling of some prescriptions or constraints, which will affect long-term timber supply considerations in the RMP.
Landscape-level biodiversity	Seral stage distribution targets recommended in the *Biodiversity Conservation Strategy* will be used for achieving biodiversity objectives outlined in the CCLUP.
Stand-level biodiversity	Wildlife tree patches are planned to reduce impact on the productive forest area as much as possible.
Pulpwood Agreement #16 timber supply	112,000m^3/year was partitioned in TSR1 for PA #16. These forest types will be segregated for TSR2.
Salvage harvesting for mountain pine beetle and winter 1998/99 ice damage.	New criteria for stands damaged or killed by mountain pine beetle are in use to address biodiversity objectives. Recent increases in salvage requirements, however, may affect short-term harvest levels and longer-term timber supply.
Inventory audit	Updated inventory needed (Vegetation Resources Inventory)
Old Growth Site Index	Current research shows that site indices for stands older than 140 years are below actual productivity. Until regional information is available, the provincial site index adjustments will be applied as a sensitivity analysis in TSR2.
Lignum Innovative Forest Practices Agreement	The IFPA gives Lignum the opportunity to test innovative forestry practices for increasing AAC and implementing successful practices in the TSA.

Issue	Comments
Goal 2 protected area candidates	Included in TSR2.
Sub-Regional Planning	SRP will refine CCLUP constraints in the TSA, including visually sensitive areas, tourism visuals, wildlife habitat areas, back country recreation and access criteria
Visually sensitive areas	Partial retention was used as the Visual Quality Objective in TSR1, but anticipated tourism pressures may find this to have overestimated the timber supply, particularly in the eastern portion of the TSA.
Wildlife habitat	Mule deer winter range strategy for harvesting in the IDF allows for no harvesting on some ranges with limited selection harvesting and extended rotations on others. Grizzly bear, moose, furbearer, species at risk – implementation strategies for CCLUP requirements to manage for habitat for these species are being developed on an ongoing basis; for enhanced forestry activities, standards for maintaining habitat supply will include considerations for these species.
Riparian habitat	The inclusion of riparian reserves and management zones reduces the productive forest land area with potential impact on the availability of mature volume for harvesting.
Green-up	Under discussion and will be refined. Patch size is a related issue.
Community dependence	As shown on page 1 under Basic Data, approximately 1/3rd of total employment in the TSA relies on the forest industry. Public input is most prominent on this socio-economic issue. Future Timber Supply Reviews and AAC determinations will need to balance timber availability with community dependence and opportunities for mitigating projected falldowns with development of alternate economic bases.

3.0 Incremental Silviculture History

The incremental silviculture program began in the Cariboo region in the late 1970's with juvenile spacing in spruce-balsam stands near Wells in the Quesnel TSA. Throughout the Cariboo region, various federal and provincial employment programs (EBAP, FWAP, etc.) through the 1980's provided funds to train people in juvenile spacing while accomplishing significant amounts of treated area. Much of this early work in the 100 Mile House TSA was conducted in uneven-aged drybelt Douglas-fir stands and wildfire-origin lodgepole pine stands. Monitoring of treatment results helped lead to refinement of target densities and an understanding of the interactions of incremental silviculture and forest health.

The initiation of the first federal-provincial FRDA (Forest Resource Development Agreement) in 1985 expanded the incremental silviculture program with later legislative changes in 1987 diverting some juvenile spacing treatments into basic silviculture requirements. FRDA I helped establish Regional conifer release, fertilization and pruning programs to add to continued juvenile spacing, with some spacing of transition and wetbelt stands also underway in the eastern part of the TSA. FRDA II continued these trends, followed by the establishment of Forest Renewal BC in 1995, which brought socio-economic considerations to incremental silviculture programs and treatments.

Treatment	10-year average area treated/year (ha)	Treatment Cost (per ha)	
		Average	Range
Juvenile spacing	2134	$475 (1998)	$400-$550 (1998)
Fertilization (1987-89, 1994 only)	211	$124	$80-$207

Table 2. Summary of Incremental Silviculture Area Treated and Costs for the 100 Mile House TSA (ISIS data).

Historically, in the 100 Mile House TSA, 1000 to 2000 hectares have been juvenile spaced annually to avoid height repression of lodgepole pine, encourage the development of Douglas-fir and create more even distribution of piece sizes. These recent historical levels of silviculture activity, especially those relevant to disease control and density management, were incorporated as part of the first Timber Supply Review (TSR1). However, for the TSR1 AAC determination, the chief forester decided that the effects of incremental stand tending up to the end of 1995 had no influence on AAC (Pedersen, 1996). Therefore, maximum density control activities have been removed from TSR2 calculations. If this results in substantial cuts to stand tending activities, revisions to projected stand yields, and therefore harvest flow, may be necessary.

The TSR2 timber supply analysis uses a regeneration delay of two years for planted areas and four years for natural regenerated areas under basic silviculture. Management practices that exceed this minimum requirement will improve the timber supply forecast. TSR2 does not base the timber supply on any incremental silviculture treatments.

Commercial thinning has not been incorporated in either of the TSRs. The Chief Forester states there is a substantiable even flow of timber and therefore large-scale commercial thinning is not required to compensate for age class gaps. Approximately 16% (114,900 ha) of forests in the 100 Mile TSA are 30-80 years of age and may be candidates for commercial thinning (BC Ministry of Forests, 1999b).

4.0 Opportunities to Increase Timber Supply

The Cariboo Forest Region has undertaken extensive review and analysis of its long-term timber supply for the Williams Lake, Quesnel and 100 Mile House TSA's. Inter-agency committees of MOF, industry and MELP staff worked under the Timber Investment Strategy Committee (TISC) initiative from 1996 to early 1999 (CLMA, 1997; Cariboo Forest Region TISC, 1996, 1997; Timberline, 1998). The TISC reports provide the most reliable framework currently available for the Sustainable Harvest component of the Resource Management Plan.

The *Stand Treatments Analysis* report for the 100 Mile House TSA (Timberline, 1998) outlines the methodology used in the timber supply analysis. FSSIM 3.0, a forest-level simulation model, predicted the development of a forest over a 250-year planning horizon based on initial forest conditions, expected patterns of growth, harvesting and regeneration rules, and assumptions for non-timber resources. A list of the analysis options with a brief description of each and its effect on timber supply follows to demonstrate the breadth of scenarios tested and examined.

The majority of annual harvest adjustments related to the various treatments were associated with the TSA clearcut portion of the landbase.

Table 3. Summary of *Stand Treatment Analysis* Options and their Effect on Timber Supply.

Analysis Option	Description	Effect on Timber Supply
Base Case	The management assumptions, land base netdowns, general growth and yield parameters and forest cover requirements from TSR1 were used, with some minor changes to the development of analysis units to better reflect anticipated TSR2.	The base case even-flow harvest rate of 1,291,000 for the TSA clearcut is 3% above the current AAC of 1,250,000 m^3/year. The TSA clearcut and PA16 harvest levels are stable over time. Some fluctuations exist in selection harvest levels due to the current age class distribution for forests on those areas and the history of past harvesting. The average annual harvest from the TSA component (clearcut, FD-selection & MDWR selection) is 1,443,100 m^3/year (net of Non Recoverable Losses) which is 15% higher than the current AAC.
Old Growth Site Index adjustments	OGSI adjustment equations, including SIBEC, were used for interior spruce and lodgepole pine to more accurately assess productivity of stands older than 140 years.	The maximum gain is slightly less than 5% over base case. PA16 and selection areas were not adjusted. The OGSI adjustment on Managed Stand Yield Tables reduces the impact of the critical period 130-150 years into the future because there is more merchantable volume at that time.
Reduced Time to Green-up	Green-up period for the IRM and visual constraint areas was reduced by 3 years, to better reflect stand treatments such as brushing and fertilization that can reduce the time for stands to reach 3 m in height.	The increase over the Base Case + OGSI harvest rate in this scenario is negligible.
Reduced Regeneration Delay	The expected time for stands to become established was reduced by two years.	Decreasing regeneration delay by two years results in an increase in the annual harvest rate of approximately 2%.
Genetically Improved Planting Stock	Tree improvement gains of 12% volume increase at rotation were used by adjusting site index with two candidate groups reviewed, lodgepole pine included and excluded.	Inclusion of pine increases periodic harvest by 12%. However, results may be too optimistic because of the assumption that all future pine stands will be regenerated by planting, compared with only 10% in base case. If genetic gains are applied only to Douglas–fir and spruce stands, the gain is 3%.
Alternative Spacing Densities	Pine and spruce densities were increased to 3600 and Douglas-fir to 3000 stems/hectare. Pine and spruce were decreased to 1200 and Douglas-fir to 1000 stems/ha.	Increased densities reduce harvest rate by 1%. Decreased densities reduce harvest rate by 3%.
Fertilization and Spacing	Volume of all eligible lodgepole pine managed stands was increased by 15 m^3/ha at rotation to reflect gains from one fertilization treatment.	Impact of fertilizing only good site pine is minimal, <0.5%. Fertilizing good and medium site pine increases annual harvest rate by 3%, and the average gain in volume by 5% over Base Case + OGSI scenario.

Analysis Option	Description	Effect on Timber Supply
Elimination of Backlog NSR	The base case scenario of 10 years to eliminate all backlog NSR (areas harvested before 1987) was reduced to 5 years.	Improvement in annual harvest with a reduced regeneration lag for backlog NSR is insignificant compared to base case. The total area of backlog NSR is only about 4500 ha (1%) of the TSA clearcut landbase so it does not play a significant part in determining the annual harvest rate.
Maximize Pulpwood Agreement #16 harvest rate	Increase the PA16 harvest rate from 112,000 to 128,800 m^3/year, an increase of 15% over base case + OGSI.	There is a surplus of mature timber within the PA16 landbase, allowing for the improved harvest rate. Many of the stands are low productivity types, however, and may take 200 years or more to meet minimum merchantability.

The *Stand Treatments Analysis* report for the 100 Mile TSA (Timberline, 1998) lists the changes in harvest level compared to the base case for all tested treatments and treatment regimes for the Clearcut portion of the supply area. This area is often the only candidate for treatment within a given analysis scenario.

Table 4. Summary Table of Analysis Results (Timberline, 1998)

Potential Treatments	Change in Harvest Volume over "Base Case + OGSI"
Base case + OGSI	+4-5% over base case
Reduce time to green-up by 3 years	0%
Reduce regeneration delay by 2 years	+2%
Genetic improvement – all species	+12%
Genetic improvement – excluding pine	+3%
Increase JS density to 3600 sph for Pl/Sx and 1000 sph for Fdi	-1%
Decrease JS density to 1200 sph Pl/Sx and 1000 sph Fdi	-3%
JS and Fertilization (1 application) on good site pine	<+0.5%
JS and Fertilization – good and medium site pine	+3%
Eliminate Backlog NSR (only 1% of TSA area)	0%
Maximize PA16 Harvest Rate	+15%

4.2 Potential Strategies by Response Time Frame

For the purposes of implementing the above treatments and treatment regimes, three timeframes are used. These timeframes are slightly modified from the timeframes used for the *Stand Treatments Analysis* to better reflect timber supply trends for the 100 Mile House TSA.

Short term covers decades 1 to 4 in the Fdi-drybelt selection supply area, and 1 to 5 for the rest of the TSA. At this time, the harvest level is successively reduced to its lowest level (22% of even-flow) in the Mule Deer Winter Range category. **Mid term** serves as a transition between the short and long terms and refers to decades 5 to 11 for the Fdi-drybelt selection supply block, and decades 6 to 11 for the rest of the TSA. At this point the Fdi-drybelt selection supply area is at its lowest level (67% of even-flow). **Long term** refers to the long-term sustainable harvest level for the remaining timeframe in the 250-year planning horizon using the base case assumptions. The entire TSA attains an even-flow configuration from decades 12 to 20, after which the Fd-drybelt selection harvest drops up to 13% over the rest of the rotation.

4.3 Summary of Issues by Period

The following information is based on report analysis in BC Ministry of Forests, 1999b.

4.3.1 Short Term

A preponderance of mature timber results in short-term harvest levels being insensitive to most factors. The short term is sensitive only to increases or decreases in the old growth requirement, which has the effect of increasing or decreasing the timber harvesting land base. The preponderance of mature timber, combined with its lack of sensitivity to most constraints, potentially enables short term harvest levels to be increased above current levels. However, the chief forester chose not to raise the AAC (other than a partitioned AAC for marginal timber types) because this would expose the TSA to more serious risk of timber supply impacts should other downward risk materialize.

4.3.2 Mid Term

Although there is a relatively good distribution of younger age classes, there is a mid term shortfall in harvest levels (3% drop in base case after 30 years) before rising to a long term harvest level slightly above the current AAC somewhere beyond 200 years. Although not stated in the TSR analysis addendum or chief forester rationale, a shortage of stands currently aged 30 to 60 years is likely a significant cause of this mid-term shortfall.

4.3.3 Long Term

The long term is sensitive only to changes in old growth requirements and regenerated stand volumes. As in the short and mid terms, increasing or decreasing the old growth requirement has an effect similar to increasing or decreasing the timber harvesting land base. The sensitivity to changes in regenerated volumes is virtually on a 1:1 ratio; for every 1% increase or decrease in regenerated volumes there is a corresponding 1% increase or decrease in the long term harvest level.

Existing forests have about 15% more volume than regenerated forests. This means that after the transition to secondary forests more area must be harvested to maintain the same harvest level. The analysis report (p. 18) also shows the average harvest age also dropping from 180 years in the first 10 decades to 125 years after decade 11 (Timberline, 1998).

4.4 Actions to Improve Timber Supply

Overall the 100 Mile House TSA provides a good opportunity for management actions that will result in improved timber supply (BC Ministry of Forests, 1999b).

Improving regeneration delay has a noticeable impact on the periodic harvest. This relates to the importance of the timing of availability of managed stands 60 to 80 years into the future when a harvest shortfall occurs, and the volume offered by those managed stands. Therefore, treatments that reduce minimum harvest ages for managed stands and/or increase the volume associated with those stands are likely to provide the best improvements to timber supply.

Improving timber availability during the critical periods approximately 70 years and 130 to 150 years into the future allows an increase in the harvest level over the entire planning horizon. Any volume increases to managed stands as a result of tree improvement or fertilization treatments result in gains of between 2.5% and 10.5%. These gains are based on treating all eligible stands and therefore may be overly optimistic, as this level of treatment may not be operationally realistic.

Table 5. Summary of Treatments and Strategies to Improve Timber Supply.

Term	Priority	TSA Portion	Treatment	Strategy to Improve Timber Supply
Long	1	Clearcut	Brush impeded stands	**Increases land base** available for timber production and/or total yield. Also addresses short term adjacency issues.
		All except PA16	Surveys	Schedules all other treatments and identifies Site Index and site occupancy gains.
		All	BTK spraying for budworm	Maintains expected yield/ **increases land base** available for harvest. A loss of 20% growth is assumed if not treated. In the short term issues of adjacency and investment loss are addressed. 100 Mile district is having difficulties with budworm reverting stands to NSR, which is especially a problem if there has been a previous JS investment. Also, FG declarations have been held up.
	1(year2000) 2(>year2000)	All except PA16	Reforestation of backlog areas	Increases land base available for timber production. In the short term addresses adjacency issues.
	2	All except PA16	Juvenile spacing uneven aged stands and repressed stands	Creates a merchantable stand at an earlier age. Uneven-age, layer 3 reduction gives an increased growing space response.
		All	Bark beetle control. Includes Aerial overview survey, Trap tree and bait, and fall and burn programs	Keeps beetles from becoming epidemic, which would skew the harvest flow.
	3	All except PA16	Fill/incremental plant	Increases yield in the long term, and addresses adjacency in the short term
Mid	4	Clearcut	JS even-age pine for commercial thinning setup	Ensure continuous supply of suitable spaced and/or fertilized stands for commercial thinning. Addresses adjacency issues in the short term, and creates harvest access in areas that are constrained for other reasons in the long term.
		All except PA16	Fertilization	Increased yield.
Long		All	OGSI adjustments	Higher site index produces minimum operable piece size earlier and makes stands eligible for harvest sooner in the short term. Incorporate SIBEC study for TSR purposes. Determine SI for all managed stands at the time of surveys.
			Genetically improved stock	Unrealistic scenario for pine and fir as the majority of 100 Mile's seed planning zones are not on the provincial plan for improved seedlings. MOF staff have been advised to expect no improved seed for 10-20 years. Use genetically improved seedlings for areas with available seed. No volume gain will be realized until rotation, but rotation will be earlier than for conventional stands, or, regular rotation lengths produce larger piece size.

** An **increase in the land base** available for production has a greater impact on the AAC, therefore it is more important to spend funding on activities that increase the land base/timber supply, before spending on those that increase yield.*

5.0 Opportunities to Improve Timber Quality

Maintaining sustainable harvest levels in the 100 Mile House TSA is more a matter of timber quantity than quality due to a need to offset the minor short-term decline in timber supply (3%) in decades 3-6. This objective is the focus of the incremental silviculture program and the Sustainable Harvest plan and is likely to continue until the timber supply falldown is resolved. Timber quality is not a predominant issue.

Nevertheless, target rotations will allow for a range of piece size objectives. During periods of severely constrained wood flow, it is expected that the average piece size will decrease near minimums of 12.5 cm *(pine??)* and 17.5 cm dbh *(other species??)*.

5.1 Potential Treatments

Density management is the most important means of offsetting the short-term harvest level decline. Through planting and juvenile spacing in combination with fertilization, second growth stands are able to reach target piece size without the threat of overcrowding and reduced stem diameter growth. Density management is therefore regarded as the most effective means of alleviating the short-term timber supply deficit while ensuring that appropriate log sizes are available at rotation.

Pruning is well documented as a treatment to improve timber quality (BC Ministry of Forests, date unknown; Barber, 1997). Other technical sources include the *Technical Background Information, Timber Enhancement Strategy* report, prepared by the Cariboo Lumber Manufacturers' Association (1997), which summarizes technical information on silviculture treatment benefits. The report lists pruning of young stands as a means to improve stem quality and log value at harvest. Stands most eligible for pruning have a high site index, developed access and close proximity to manufacturing facilities.

Growth rates expected in various ecosystems within the 100 Mile TSA indicate that pruning is only viable in the more productive subzones. Therefore, operational pruning in the 100 Mile House TSA has not been conducted to date. Pruning is expected to remain a low priority treatment for the TSA for some time.

5.2 *Potential Strategies by Response Time Frame*

The following table is extracted from BC Ministry of Forests, 1999b.

Treatment	Comment / Potential Treatment Regimes	Treatable Area
General	Test treatments and regimes necessary to implement above strategies.	
Conifer Release/ Brushing	No opportunities noted in timber supply analysis	345 ha of non-commercial cover excluded from analysis
Fill Planting	Fill planting can significantly increase final harvest volumes, improve future commercial thinning opportunities, improve species diversity, enhance Douglas-fir volumes under lodgepole pine and enhance habitat attributes. (TISC, p7)	1230 ha
Spacing	1000 to 2000 ha/year at time of TSR1.	
Fertilization	Not analyzed in TSR. Has potential in the long term to increase regenerated stand volumes. Analysis indicates CT is viable. TISC report indicates "Future harvesting in this TSA will definitely involve increased intermediate entries."	12,684 ha (previously spaced to <2000 sph and 20 ha minimum opening size.)
Commercial Thinning	Not currently practiced. Not currently required to compensate for age class gaps.	
Backlog NSR	No additional opportunity. Existing amount of 12,103 to be eliminated over next 10 years. (uncorrected)	TISC/B indicates only 8207 ha of backlog on all sites.
Conversion	Deciduous: No additional opportunity to harvest/rehabilitate deciduous. Partitioned AAC to allow for harvest of marginal stands. No indication of what species these areas will be regenerated to.	N/A
	Lodgepole pine: TISC recommends rehabilitation of severely repressed pine.	Not an issue in 100 Mile House TSA
	Rehabilitation logging: TISC recommends rehab logging of old partially-harvested areas.	1195 ha

5.2 *5.3 Timber Quality Forecast Scenarios*

The effects of incremental silviculture on the future quality of the timber resource were not analyzed in the timber supply review (BC Ministry of Forests, 1999b). In the long term, there is the potential to target those stands to be held for >150 years for premium logs through a spacing/pruning/fertilization regime.

6.0 Habitat Supply

6.1 *Background*

Habitat supply relies on the maintenance of natural patterns of forest structural complexity associated with the various seral stages across the landscape. This structural complexity includes both physical attributes (snags, decadence features, coarse woody debris (CWD), multiple canopies and stand gaps) and species composition or forest community characteristics.

Natural species composition and structural character are established at the early seral stage with changes following successional patterns as the forest grows older. The structural complexity of the early seral forests tends to be moderate, due to the heterogeneity of young forests, with natural shrub and deciduous communities contributing to increased early seral complexity. Immature and mature forests have the least complexity as they often crowd out herb and shrub communities through canopy closure. Such stands are typically low in representation of decadence attributes such as snags and CWD which are important habitat features. As the forest grows old, structural complexity tends to increase as the forest canopy develops gaps from older trees dying out, and one or more understory levels from younger trees becoming established. The overall patterns of structural and species composition develop in these ecosystems based on the intensity, frequency and size of the disturbance events that initiate or maintain the stands. This, in turn, determines the time periods in which stands develop structural character and species composition .

Conservation of species composition and structural character of stands is implicit in the ecosystem-based approach to managing for biodiversity, as outlined in the Biodiversity Guidebook. This approach consists of managing for the species composition and structural patterns that are naturally associated with the main seral stages in the various ecosystems. A high priority is placed on maintaining minimum amounts of mature and old forest across the landscape, as the highest biodiversity values are associated with the diverse range of structural and species composition typically found in older forests. Current forest harvesting practices are based on shorter rotation cycles than present in natural ecosystems, resulting in much lower than natural amounts of mature and old forests being maintained across the landscape over the long term, along with much higher than natural amounts of early seral forests. Managed forests also tend to be structurally simple with altered communities, in comparison to natural representation.

6.2 Enhanced Forestry

Incremental silviculture activities, such as brushing and juvenile spacing, can greatly alter the natural species composition and structural character associated with the different seral stages. These treatments often significantly reduce early seral understory diversity (structural character and/or species composition), and the resulting impacts to habitat supply can persist through successive seral stages. Combined with the unnaturally low amounts of mature and old forests and unnaturally high amounts of early seral forests associated with current forest management practices, the potential exists for significant negative impacts to habitat supply. However, potential also exists for incremental silviculture activities to have a benign or even beneficial impact on habitat supply when planned with consideration for habitat and biodiversity conservation.

In general, the objective of enhanced forestry activities is to increase the harvestable volume of trees within a specified rotation period, either by allowing trees to grow faster or attain better timber attributes at smaller diameter or younger age, or by partial harvest partway through the rotation to remove competing stems for commercial use before they are lost to succession. Enhanced forestry activities that accomplish timber enhancement objectives but reduce structural character or species composition create a negative impact on habitat supply.

6.2.1 Potential Negative Impacts Associated with Incremental Silviculture

Some potential negative impacts of incremental silviculture are:

- Herbicide brushing, that removes or alters the shrub and/or deciduous component over large portions of early seral, and consequently later successional stages, in ecosystems where these are important components of habitat supply. Manual brushing usually causes only a temporary removal of these components.
- Juvenile spacing marginal pine stands eliminates a significant portion of habitat supply for small mammals and their predators (eg. snowshoe hare and lynx), and impedes wildlife movement patterns for many other species, for minimal timber benefit (often less than the cost of the spacing).
- Commercial thinning removes understory canopy layers, significantly reducing the structural (and sometimes species composition) complexity of mid, mature and old seral habitats.

6.2.2 Potential Beneficial Impacts Associated with Incremental Silviculture

Incremental silviculture can benefit habitat supply if timber objectives are properly integrated with the need to maintain stand structural character and natural species composition. Acceleration of stand development to address timber supply issues need not result in negative impacts to habitat supply if prescriptions include strategies to create or sustain representation of key attributes. The following points outline the potential planning applications for an integrated timber/habitat supply approach to incremental silviculture.

1. **Clumpy Spacing in Douglas-fir stands for Mule Deer Winter Range**
    - Develops canopy and stand attributes for snow interception, thermal cover and herb/shrub production.

2. **Forage and Cover for Bears**
    - Creating stands of variable stem density to develop cover attributes and maximize production of forage shrubs and herbs in early and late seral stages (especially relevant to habitat conservation for grizzly bear); denning and day beds associated with large trees.
    - Closed canopy forests from early through mature seral stages are typically "green deserts" for species such as bears and some furbearer species that require patchy stands with potential for vigorous production of shrub/herb communities.

3. **Caribou Habitat**
    - Closed canopy young forests are actively avoided by caribou. Such stands provide ambush cover for predators and offer little as forage due to suppression of lichen growth and herb/shrub communities. These areas also concentrate caribou to unmanaged forest patches which become increasingly small as logging progresses. This defeats predator avoidance strategies which require access to large areas of suitable habitat (lichens) to permit nomadic behavior.
    - Treatments should be designed to produce variable density stands that allow development of stand openings and typical herb/shrub communities while promoting development of lichen biomass.

4. **Riparian Restoration**
    - Treatments designed to accelerate development of coniferous and deciduous stands with typical herb/shrub communities along streams, wetlands and lakes where previous

logging has removed forest cover, important riparian habitat, large trees providing shade and a source of large organic debris.

5. **Mitigation of Effects of High Equivalent Clearcut Area (ECA)**
   - Acceleration of canopy and stand attribute development to permit faster hydrologic recovery of impacted watersheds.
   - Treatments should be designed to develop snow interception attributes as well as stand openings which will accumulate snow that is shaded from atmospheric influences. Accelerating the development of, or emulating, old forest features will slow runoff with commensurate benefit to fish and fish habitat including water quality.

6. **Re-establishment of Natural Species Composition and Mixed Species Stands**
   - Treatments designed to permit re-establishment of typical forest communities will permit faster rehabilitation of landscapes where biodiversity targets are threatened. Impacts of previous disturbances and logging histories may be incrementally mitigated.
7. **Acceleration of Development of Stands with Appropriate Mature and Old Forest Attributes**
   - For some ecosystems, especially those managed on uneven-aged silvicultural systems, treatments may accelerate development of certain attributes that contribute to seral condition.
   - Treatments designed to accelerate development of mature and old forest may be applied strategically to re-establish habitat supply deficits resulting from short rotation forestry practices in landscapes with extensive logging history

6.3 Principles for Habitat Maintenance and Enhancement for Incremental Silviculture

For the range of enhanced forestry activities included in the Sustainable Harvest component of the Resource Management Plan , the following principles need to be applied:

1. Activities and treatments that are designed to deliver beneficial impact to habitat supply, as well as timber objectives, should be given highest investment priority.

2. The second priority for investment should be assigned to projects which intend to address timber objectives, but are designed to effectively mitigate impacts to habitat supply.

3. Activities and treatments producing negative impacts on habitat supply, and designed purely for timber enhancement, should be avoided and should be accorded last priority for investment.

4. For all activities and treatments, MELP is consolidating and developing standards to maintain or enhance habitat supply, and mitigate negative impacts to natural species composition and structural complexity attributes. As investment planning proceeds, and enhanced forestry strategies are developed by proponents, MELP will distribute guidance documents to assist with the integration of timber and habitat supply objectives. The corporate objective of MELP is to ensure that all incremental silviculture treatments are consistent with standards to address habitat supply issues.

6.4 Integration of Habitat Supply and Timber Objectives For 100 Mile TSA

Juvenile spacing is identified a the main priority for incremental silviculture, both in uneven aged stands to create a merchantable stand at an earlier age, and of even aged pine to supply future commercial thinning opportunities.

Increasing PA16 harvest rate is also noted as an option for increasing timber supply. This option needs to be assessed in terms of landscape biodiversity impacts.

As outlined above in section 6.2, juvenile spacing and commercial thinning treatments need to be designed and directed to avoid negative impacts on structural character and species composition, and thus habitat supply. The strategy of this RMP to accomplish these objectives is twofold:

- As outlined above in section 6.3, MELP is consolidating and developing standards for commercial thinning and juvenile spacing treatments to maintain, enhance and/or mitigate negative impacts to natural species composition and structural complexity attributes.
- This RMP proposes the following studies (see Table B):
    1. For commercial thinning – Study the magnitude of commercial thinning opportunities (ha's/yr and geographic areas) and measures to integrate habitat supply objectives.
    2. For juvenile spacing – Assess the magnitude of juvenile spacing opportunities in terms of the need to direct these treatments to areas where the treatments are both economically worthwhile (SI > 8) and beneficial or benign to habitat supply.

7.0 Working Targets

Working targets for the 100 Mile House TSA are:

1. Augment short-term harvest levels (decades 3-6), recognizing the ability of site index adjustments, improving regeneration delay, and treatments that reduce minimum harvest ages for managed stands and/or increase the volume associated with those stands for significantly improving the short- and long-term harvest levels.

2. Increase the mid- and long-term harvest level (decades 3-6 and 13-15).

8.0 Incremental Silviculture Program

100 Mile House TSA Tables.

8.0 Incremental Silviculture Program

100 Mile House tables

100 Mile House TSA
Table A: Backlog Activities
Prepared: September 21, 1999

Legal Obligations

		Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	0	0	0	0	0	$0.0	$0.00	9
2	Site preparation	0	0	0	0	0	$0.0	$0.00	9
3	Planting	0	0	0	0	0	$0.0	$0.00	9
4	Brushing	20	20	20	20	20	$10.0	$500.00	1
5	Seed purchase	24000	24000	24000	24000	24000	$6.0	$0.25	1
6	Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
7	Pruning	0	0	0	0	0	$0.0	$0.00	9
	Totals	20	20	20	20	20	$16.0	$799.84	

Backlog Reforestation

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	10000	10000	10000	10000	10000	$363.0	$36.30	1
2	Site preparation	200	200	200	200	200	$88.0	$440.00	1
3	Site restoration road/land. rehab	200	200	200	200	200	$565.4	$2,827.00	5
4	Planting	200	200	200	200	200	$145.2	$726.00	1
5	Brushing	50	100	150	200	250	$27.5	$550.00	1
6	Seed purchase	240000	240000	240000	240000	240000	$69.5	$0.29	1
	Totals	10650	10700	10750	10800	10850	$1,258.6	$118.18	

Impeded areas

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	1000	1000	1000	1000	1000	$44.0	$44.00	1
2	Site preparation	0	0	0	0	0	$0.0	$0.00	9
3	Planting	0	0	0	0	0	$0.0	$0.00	9
4	Brushing	1000	1000	1000	1000	1000	$550.0	$550.00	1
5	Seed purchase	0	0	0	0	0	$0.0	$0.00	9
	Totals	2000	2000	2000	2000	2000	$594.0	$297.00	

Backlog Activities - Management Unit Total

		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	11000	11000	11000	11000	11000	$407	$37.00	
2	Site preparation	200	200	200	200	200	88	$440.00	
3	Site restoration road/land. rehab	200	200	200	200	200	565	$2,827.00	
4	Planting	200	200	200	200	200	145	$725.99	
5	Brushing	1070	1120	1170	1220	1270	588	$549.07	
6	Seed purchase	264000	264000	264000	264000	264000	76	$0.29	
7	Max. density spacing	0	0	0	0	0	0	$0.00	
8	Pruning	0	0	0	0	0	0	$0.00	
9	Studies	2000	2000	2000	2000	2000	10	$5.00	3
	Totals	278670	278720	278770	278820	278870	$1,879	$6.74	

100 Mile House TSA
Table B: Stand Tending Activities
Prepared: September 21, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
Activities	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	4000	4000	4000	4000	4000	$308	$77.00	2
2 Spacing	2000	2000	2000	2000	2000	1,100	$550.00	2
3 Pruning	0	0	0	0	0	0	$0.00	9
4 Fertilizing	2000	2000	2000	2000	2000	660	$330.00	3
5 Studies SIBEC (for 4 years)	100000	100000	100000	100000	0	110	$1.10	1
6 Other	0	0	0	0	0	0	$0.00	9
Totals	108000	108000	108000	108000	8000	2178	$20.17	

100 Mile House TSA
Table C: Forest Health Enhancement Activities
Prepared: September 21, 1999

	Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Site rehab	0	0	0	0	0	$0.0	$0.00	9
2	Spacing	0	0	0	0	0	$0.0	$0.00	9
3	Pruning	0	0	0	0	0	$0.0	$0.00	9
4	Root Rot Stump and Plant	50	50	50	50	50	$115.5	$2,310.00	2
5	Budworm Spray	12000	12000	12000	12000	12000	$330.0	$27.50	1
6	Trials: Armillaria & Budworm spacing	130	100	100	130	100	$137.0	$1,053.85	2
	Totals	12050	12050	12050	12050	12050	$445.5	$36.97	

100 Mile House TSA
Table D: Forest Health Maintenance Activities
Prepared: September 21, 1999

	Activities	Units	Five-year Plan Goals (ha)					Annual Plan 2000/01		
			2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Ground Surveys	ha	1400	1400	1400	1400	1400	$350.0	$250.00	1
2	Aerial Surveys	hours of flying time	100	100	100	100	100	$50.0	$500.00	1
3	Fall and burn treatment	trees	16000	16000	16000	16000	16000	$550.0	$34.38	1
4	MSMA treatment	trees	0	0	0	0	0	$0.0	$0.00	9
5	Pheromone baiting	trees	2000	2000	2000	2000	2000	$50.0	$25.00	1
6	Defoliator spraying	ha	0	0	0	0	0	$0.0	$0.00	9
7	Studies	number	0	0	0	0	0	$0.0	$0.00	9
8	Other		0	0	0	0	0	$0.0	$0.00	9
	Totals		19500	19500	19500	19500	19500	$1,000.0	$51.28	

100 Mile House TSA
Table E: Current Fire and Pest Activities
Prepared: September 21, 1999

	Activities	Five-year Plan Goals (ha)					Annual Plan 2000/01		
		2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1	Planning/surveys/prescriptions	1000	1000	1000	1000	1000	$45.0	$45.00	3
2	Site preparation	200	200	200	200	200	$50.0	$250.00	3
3	Planting	0	200	200	200	200	$0.0	$0.00	9
4	Brushing	0	20	20	20	20	$0.0	$0.00	9
5	Max. density spacing	0	0	0	0	0	$0.0	$0.00	9
6	Studies	0	0	0	0	0	$0.0	$0.00	9
7	Seedling Purchase	240000	240000	240000	240000	240000	$80.0	$0.33	3
	Totals	1200	1420	1420	1420	1420	$175.0	$145.83	

100 Mile House TSA
Table F: Habitat Supply Activities
Prepared: September 21, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
1 Planning/surveys/prescriptions	0	0	0	0	0	$0	$0	9
2 Site preparation	0	0	0	0	0	0	0	9
3 Planting	0	0	0	0	0	0	0	9
4 Brushing	0	0	0	0	0	0	0	9
5 Spacing	0	0	0	0	0	0	0	9
6 Pruning	0	0	0	0	0	0	0	9
7 Studies	0	0	0	0	0	0	0	9
8 Others	0	0	0	0	0	0	0	9
Totals	0	0	0	0	0	$0	$0	

100 Mile House TSA
Table G: Incremental Reforestation
Prepared: September 21, 1999

	Five-year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Fill planting								
1 Planning/surveys/prescriptions	200	200	200	200	200	$15.4	$77.00	4
2 Planting	0	200	200	200	200	$0.0	$0.00	9
3	0	0	0	0	0	$0.0	$0.00	9
4	0	0	0	0	0	$0.0	$0.00	9
5 Seedling Purchase	240000	240000	240000	240000	240000	$88.0	$0.37	4
Totals	200	400	400	400	400	$103.4	$516.99	
Rehabilitation of Poorly Performing Stands								
1	0	0	0	0	0	$0	$0	9
2	0	0	0	0	0	0	0	9
3	0	0	0	0	0	0	0	9
4	0	0	0	0	0	0	0	9
5	0	0	0	0	0	0	0	9
Totals	0	0	0	0	0	$0	$0	
Road, Landing, Hillslope and Riparian Reforestation								
1	0	0	0	0	0	$0	$0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	
Totals	0	0	0	0	0	$0	$0	
Incremental Reforestation - Management Unit Total	200	400	400	400	400	103.4	$516.97	4

100 Mile House TSA
Summary Table
Prepared: September 21, 1999

Table Totals	Five-Year Plan Goals (ha)					Annual Plan 2000/01		
	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
Table A: Backlog Activities	278,670	278,720	278,770	278,820	278,870	1,879	7	
Table B: Stand Tending Activities	108,000	108,000	108,000	108,000	8,000	2,178	20	
Table C: Forest Health Enhancement Activities	12,050	12,050	12,050	12,050	12,050	446	37	
Table D: Forest Health Maintenance Activities	19,500	19,500	19,500	19,500	19,500	1,000	51	
Table E: Current Fire and Pest Activities	1,200	1,420	1,420	1,420	1,420	175	146	
Table F: Habitat Supply Activities	0	0	0	0	0	0	0	
Table G: Incremental Reforestation	200	400	400	400	400	103	517	
Totals of all tables	419,620	420,090	420,140	420,190	320,240	5,781	778	

Table and category			Activity		Five-Year Plan Goals (ha)					Annual Plan 2000/01		
					2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority
A	Backlog	Legal	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
A	Backlog	Legal	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog	Legal	3	Planting	0	0	0	0	0	0	0	9
A	Backlog	Legal	4	Brushing	20	20	20	20	20	10	500	1
A	Backlog	Legal	5	Seed Purchase	24,000	24,000	24,000	24,000	24,000	6	0	1
A	Backlog	Legal	6	Max. density spacing	0	0	0	0	0	0	0	9
A	Backlog	Legal	7	Pruning	0	0	0	0	0	0	0	9
A	Backlog	Backlog	1	Planning/surveys/presc.	10,000	10,000	10,000	10,000	10,000	363	36	1
A	Backlog	Backlog	2	Site preparation	200	200	200	200	200	88	440	1
A	Backlog	Backlog	3	Site Restoration Road/land.	200	200	200	200	200	565	2,827	5
A	Backlog	Backlog	4	Planting	200	200	200	200	200	145	726	1
A	Backlog	Backlog	5	Brushing	50	100	150	200	250	28	550	1
A	Backlog	Backlog	6	Seed Purchase	240,000	240,000	240,000	240,000	240,000	70	0	1
A	Backlog	Impeded	1	Planning/surveys/presc.	1,000	1,000	1,000	1,000	1,000	44	44	1

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
A	Backlog Impeded	2	Site preparation	0	0	0	0	0	0	0	9
A	Backlog Impeded	3	Planting	0	0	0	0	0	0	0	9
A	Backlog Impeded	4	Brushing	1,000	1,000	1,000	1,000	1,000	550	550	1
A	Backlog Impeded	5	Seed Purchase	0	0	0	0	0	0	0	9
A	Backlog Total	7	Studies	2,000	2,000	2,000	2,000	2,000	10	5	3
B	Stand Tending	1	Planning/surveys/presc.	4,000	4,000	4,000	4,000	4,000	308	77	2
B	Stand Tending	2	Spacing	2,000	2,000	2,000	2,000	2,000	1,100	550	2
B	Stand Tending	3	Pruning	0	0	0	0	0	0	0	9
B	Stand Tending	4	Fertilizing	2,000	2,000	2,000	2,000	2,000	660	330	3
B	Stand Tending	5	Studies (SIBEC)	100,000	100,000	100,000	100,000	0	110	1	1
B	Stand Tending	6	Other	0	0	0	0	0	0	0	9
C	FH Enhancement	1	Site rehab	0	0	0	0	0	0	0	9
C	FH Enhancement	2	Spacing	0	0	0	0	0	0	0	9
C	FH Enhancement	3	Pruning	0	0	0	0	0	0	0	9
C	FH Enhancement	4	Studies	50	50	50	50	50	116	2,310	2
C	FH Enhancement	5	Others	12,000	12,000	12,000	12,000	12,000	330	28	1
D	FH Maintenance	1	Ground Surveys (ha)	1,400	1,400	1,400	1,400	1,400	350	250	1
D	FH Maintenance	2	Aerial Surveys (hours flying)	100	100	100	100	100	50	500	1
D	FH Maintenance	3	Fall & burn treatment (trees)	16,000	16,000	16,000	16,000	16,000	550	34	1
D	FH Maintenance	4	MSMA treatment (trees)	0	0	0	0	0	0	0	9
D	FH Maintenance	5	Pheromone baiting (trees)	2,000	2,000	2,000	2,000	2,000	50	25	1
D	FH Maintenance	6	Defoliator spraying (ha)	0	0	0	0	0	0	0	9
D	FH Maintenance	7	Studies (number)	0	0	0	0	0	0	0	9
D	FH Maintenance	8	Other	0	0	0	0	0	0	0	9
E	Current Fire/Pest	1	Planning/surveys/presc.	1,000	1,000	1,000	1,000	1,000	45	45	3
E	Current Fire/Pest	2	Site preparation	200	200	200	200	200	50	250	3
E	Current Fire/Pest	3	Planting	0	200	200	200	200	0	0	9
E	Current Fire/Pest	4	Brushing	0	20	20	20	20	0	0	9
E	Current Fire/Pest	5	Max. density spacing	0	0	0	0	0	0	0	9
E	Current Fire/Pest	6	Studies	0	0	0	0	0	0	0	9
E	Current Fire/Pest	7	Other	240,000	240,000	240,000	240,000	240,000	80	0	3
F	Habitat Supply	1	Planning/surveys/presc.	0	0	0	0	0	0	0	9
F	Habitat Supply	2	Site preparation	0	0	0	0	0	0	0	9
F	Habitat Supply	3	Planting	0	0	0	0	0	0	0	9
F	Habitat Supply	4	Brushing	0	0	0	0	0	0	0	9

Table Totals

				Five-Year Plan Goals (ha)					Annual Plan 2000/01		
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Priority
F	Habitat Supply	5	Spacing	0	0	0	0	0	0	0	9
F	Habitat Supply	6	Pruning	0	0	0	0	0	0	0	9
F	Habitat Supply	7	Studies	0	0	0	0	0	0	0	9
F	Habitat Supply	8	Others	0	0	0	0	0	0	0	9
G	Incremental Reforestation			200	400	400	400	400	103	517	4
	Totals			659,620	660,090	660,140	660,190	560,240	$5,781		

District or Regional Summary Table
Prepared: September 21, 1999

Management Unit	Table and category		Activity	Five-Year Plan Goals (ha)					Annual Plan 2000/01					
				2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	Funding ($000)	Unit Cost ($)	Man. Unit Priority	Regional Priority		
100 Mile House TSA	A	Backlog Legal	4 Brushing	20	20	20	20	20	10	500	1	0		
100 Mile House TSA	A	Backlog Legal	5 Seed Purchase	24,000	24,000	24,000	24,000	24,000	6	0	1	0		
100 Mile House TSA	A	Backlog Backlog	1 Planning/surveys/presc.	10,000	10,000	10,000	10,000	10,000	363	36	1	0		
100 Mile House TSA	A	Backlog Backlog	2 Site preparation	200	200	200	200	200	88	440	1	0		
100 Mile House TSA	A	Backlog Backlog	4 Planting	200	200	200	200	200	145	726	1	0		
100 Mile House TSA	A	Backlog Backlog	5 Brushing	50	100	150	200	250	28	550	1	0		
100 Mile House TSA	A	Backlog Backlog	6 Seed Purchase	240,000	240,000	240,000	240,000	240,000	70	0	1	0		
100 Mile House TSA	A	Backlog Impeded	1 Planning/surveys/presc.	1,000	1,000	1,000	1,000	1,000	44	44	1	0		
100 Mile House TSA	A	Backlog Impeded	4 Brushing	1,000	1,000	1,000	1,000	1,000	550	550	1	0	1,303	
100 Mile House TSA	B	Stand Tending	5 Studies (SIBEC)	100,000	100,000	100,000	100,000	0	110	1	1	0	110	
100 Mile House TSA	C	FH Enhancement	5 Others	12,000	12,000	12,000	12,000	12,000	330	28	1	0	330	
100 Mile House TSA	D	FH Maintenance	1 Ground Surveys (ha)	1,400	1,400	1,400	1,400	1,400	350	250	1	0		
100 Mile House TSA	D	FH Maintenance	2 Aerial Surveys (hours flying	100	100	100	100	100	50	500	1	0		
100 Mile House TSA	D	FH Maintenance	3 Fall & burn treatment (trees	16,000	16,000	16,000	16,000	16,000	550	34	1	0		
100 Mile House TSA	D	FH Maintenance	5 Pheromone baiting (trees)	2,000	2,000	2,000	2,000	2,000	50	25	1	0	1,000	2,743
100 Mile House TSA	B	Stand Tending	1 Planning/surveys/presc.	4,000	4,000	4,000	4,000	4,000	308	77	2	0		
100 Mile House TSA	B	Stand Tending	2 Spacing	2,000	2,000	2,000	2,000	2,000	1,100	550	2	0	1,408	
100 Mile House TSA	C	FH Enhancement	4 Studies	50	50	50	50	50	116	2,310	2	0	116	1,524
100 Mile House TSA	E	Current Fire/Pest	1 Planning/surveys/presc.	1,000	1,000	1,000	1,000	1,000	45	45	3	0		
100 Mile House TSA	E	Current Fire/Pest	2 Site preparation	200	200	200	200	200	50	250	3	0		
100 Mile House TSA	E	Current Fire/Pest	7 Other	240,000	240,000	240,000	240,000	240,000	80	0	3	0	175	
100 Mile House TSA	A	Backlog Total	7 Studies	2,000	2,000	2,000	2,000	2,000	10	5	3	0	10	
100 Mile House TSA	B	Stand Tending	4 Fertilizing	2,000	2,000	2,000	2,000	2,000	660	330	3	0	660	845
100 Mile House TSA	G	Incremental Reforestation		200	400	400	400	400	103	517	4	0	103	103
100 Mile House TSA	A	Backlog Backlog	3 Site Restoration Road/land	200	200	200	200	200	565	2,827	5	0	565	565
100 Mile House TSA	B	Stand Tending	6 Other	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	E	Current Fire/Pest	3 Planting	0	200	200	200	200	0	0	9	0		
100 Mile House TSA	E	Current Fire/Pest	4 Brushing	0	20	20	20	20	0	0	9	0		
100 Mile House TSA	E	Current Fire/Pest	5 Max. density spacing	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	E	Current Fire/Pest	6 Studies	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	F	Habitat Supply	1 Planning/surveys/presc.	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	F	Habitat Supply	2 Site preparation	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	F	Habitat Supply	3 Planting	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	F	Habitat Supply	4 Brushing	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	F	Habitat Supply	5 Spacing	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	F	Habitat Supply	6 Pruning	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	F	Habitat Supply	7 Studies	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	F	Habitat Supply	8 Others	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	A	Backlog Legal	1 Planning/surveys/presc.	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	A	Backlog Legal	2 Site preparation	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	A	Backlog Legal	3 Planting	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	A	Backlog Legal	6 Max. density spacing	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	A	Backlog Legal	7 Pruning	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	A	Backlog Impeded	2 Site preparation	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	A	Backlog Impeded	3 Planting	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	A	Backlog Impeded	5 Seed Purchase	0	0	0	0	0	0	0	9	0		

100 Mile House TSA	B Stand Tending	3 Pruning	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	C FH Enhancement	1 Site rehab	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	C FH Enhancement	2 Spacing	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	C FH Enhancement	3 Pruning	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	D FH Maintenance	4 MSMA treatment (trees)	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	D FH Maintenance	6 Defoliator spraying (ha)	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	D FH Maintenance	7 Studies (number)	0	0	0	0	0	0	0	9	0		
100 Mile House TSA	D FH Maintenance	8 Other	0	0	0	0	0	0	0	9	0	5,781	5,781

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Appendix 1 Resource Management Plan Spreadsheet

100 Mile House TSA
Sustainable Harvest
Resource Management Plan

Date last Updated 29-Jul-99

Treatment	Area	Cost/ha	Annual Cost	Annual m3 Gain	$ / m3	Gain over 5 years	Gain over Rotation	Priority	Comments
Backlog									
Planting	200	$ 660.00	$ 132,000.00	400	$ 396.38	2000	32000	1	assume an 80 yr rotation
Site Prep	50	$ 531.00	$ 26,550.00						
Surveys									
Backlog NSR	1000	$ 30.00	$ 30,000.00	2000	$ 15.00	10000	160000	1	To identify Backlog NSR
Backlog TP, SMP	1000	$ 100.00	$ 100,000.00	0		0	0	1	Required to realize the gain
Site Occupancy	10000	$ 2.00	$ 20,000.00	1000	$ 20.00	5000	80000	1	5% of survey area
Stocking	9000	$ 30.00	$ 270,000.00	0		0	0	1	Required to realize the gain
Site Index	10000	$ 1.00	$ 10,000.00	4000	$ 2.50	20000	320000	1	Estimated 20% gain
Density Management									
Juvenile Spacing	2000	$ 500.00	$1,000,000.00	200	$5,000.00	1000	16000	3	Historic levels, 5% gain on treated areas
Fertilization	2000	$ 300.00	$ 600,000.00	200	$3,000.00	1000	16000	3	Managed stands only, assume 5% gain
Incremental Planting	200	$ 600.00	$ 120,000.00	20	$6,000.00	100	1600	4	Increase stocking by 5%
Roads & Lnding Rehab	200	$ 500.00	$ 100,000.00	400	$ 250.00	2000	32000	5	Returning land to productive state
Pruning								5	No volume, measured in value $/m3
Genetic Gain	100	$ 0.30	$ 30.00	14	$ 2.14	70	1120	2	
Forest Health - Immature									
Sx Budworm	12000	$ 25.00	$ 300,000.00	4800	$ 62.50	24000	384000	1	Managed stands at risk, assume 20% loss in growth
Root Rot	200	$ 600.00	$ 120,000.00	200	$ 600.00	1000	16000	2	
	300	$ 100.00	$ 30,000.00	180	$ 166.67	900	14400	2	
Mature Forest - Bark Beetles									
Aerial Overview Survey			$ 50,000.00					1	Required to identify outbreaks

100 Mile House TSA
Sustainable Harvest
Resource Management Plan

Date last Updated 29-Jul-99

Treatment	Area	Cost/ha	Annual Cost	Annual m3 Gain	$ / m3	Gain over 5 years	Gain over Rotation	Priority	Comments
Trap Tree and Bait			$ 30,000.00	1000				1	Volume protected from damage
Fall and Burn			$ 30,000.00						
Probes								1	*Don Wright to confirm numbers*
Current Fire and Pests									
Budworm Damaged stands									
Surveys	1000	$ 25.00	$ 25,000.00	1600	$ 15.63	8000	128000	2	Year 2000 The list of treatments is a
Prescriptions	200	$ 100.00	$ 20,000.00					2	Year 2000 projected expense if the
Sowing Requests	200	$ 400.00	$ 80,000.00					2	Year 2000 Budworm spraying is not
Slash and Site Prep	200	$ 250.00	$ 50,000.00					2	Year 2001 continued. It is estimated
Planting	200	$ 550.00	$ 110,000.00	400	$ 675.00	2000	32000	1	Year 2002 that an additional 10,000 ha
Brushing	20	$ 500.00	$ 10,000.00					1	Year 2003 is at risk.
Biodiversity impact on AAC	TSA		$ 60,000.00					2	Knowledge Gap - move to SSFM

APPENDIX F: STRENGTHENING SUSTAINABLE FOREST MANAGEMENT

INTERIM

RESOURCE MANAGEMENT PLAN

2000/2001

STRENGTHENING SUSTAINABLE FOREST MANAGEMENT

Cariboo Forest Region
September 30, 1999

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"Strategy at a Glance"

General Strategy	This report provides a summary of needs for new information and better tools to improve existing strategic level decision-making processes in three main areas: • Strategic Land Use Planning • Aboriginal Issues • Timber Supply Review Activity descriptions are provided in a report and summary table.

1.0 Strategic Land Use Planning Activity Summaries

1.1 CCLUP Biodiversity Targets

Issue

The lack of current mapping and analysis of the various seral stages by Draft Landscape Unit/BEC unit, including patch size analysis, is a critical information gap that prevents implementation of strategic (CCLUP, LUP) and operational (FDP) planning requirements. In addition, the current forest inventory does not adequately describe the forest to allow proper seral stage analysis, especially regarding old growth. The creation of Old Growth Management Areas (OGMA's) to meet the biodiversity targets of the CCLUP is also a critical component of integrating all the resource values to meet the CCLUP balance. This key component cannot be achieved without an inventory that permits proper identification of the forest required to make up the OGMA's and allows thorough analysis of the current seral stage status of the forest to derive the amount of forest required for OGMA's.

Knowledge Gaps and Needs

Mapping and Analysis: Using up-to-date forest cover data, compile current mapping and analysis of the various seral stages by Draft Landscape Unit/BEC unit, including patch size analysis (see attached Activity Description 1.1.1 for patch size analysis).

Inventory: Filling the inventory information gaps, which are formidable, can be approached at various scales, from a complete re-inventory of the region, to specific inventories of individual OGMA's.

- Ideally, a provincial task force should be constituted and funded to ensure inventory procedures are updated for the identification of old growth attributes and to meet the requirements of the Biodiversity Guidebook and Landscape Unit Planning Guide.
- Moving to ever smaller scales, the next best option would be a re-inventory of age classes 7, 8 and 9 in the region to better define forest age and OGMA locations (see Activity Description 3.25, Lack of Current Information in Forest Inventory).
- The third best option would be an inventory or sampling from currently-proposed OGMA's to better determine if they do capture the old growth attributes required to meet the biodiversity targets.
- The inventory could be further refined to inventory or sample OGMA's proposed in Special Resource Development Zones or in Higher and Intermediate biodiversity emphasis draft landscape units.
- The project could be further refined to inventory/sample only those OGMA's that don't overlap with other non-timber resource values.
- Update depletions across region and recalculate seral status using current inventory data.

Research: Research is required to better define old growth attributes and develop inventory techniques to identify the attributes in the various NDT/BEC types.

Linkages and Dependencies

Filling the above information gaps will provide guidance for TSR, including better definition of mature and old stand attributes both inside and outside Mule Deer Winter Ranges, and overlaps between OGMA's, WTP's and FEN's. Dependent on up-to-date forest cover FC1 (map) and FIP (attribute) files. Linked to the need for a region-wide updating of the forest inventory for TSR.

Location

Region wide

Schedule (delivery)

Must be completed by 2005.

Cost

(Includes costs associated with Activity Description 1.1.1, CCLUP Biodiversity Strategy: Patch Size Analysis.)

2000/01	2001/02	2002/03	2003/04	2004/05
$200,000	$200,000	$200,000	$200,000	$200,000

1.1.1 CCLUP Biodiversity Strategy: Patch Size Analysis

Issue

CCLUP and the Regional Biodiversity Strategy identify the need for spatial-based planning for achieving biodiversity objectives. This includes analysis of the size, location and timing of forested patches and openings. Furthermore, these objectives can have significant implications for short-term timber availability. The patch size distribution identified for biodiversity objectives imparts significantly greater flexibility to short-term cutblock planning than the routine standards available under FPC.

Knowledge Gaps and Needs

The outstanding need at the present time is analysis by BEC unit within landscape unit of the current distribution of patch sizes (*patch* is defined in the glossary of the Biodiversity Guidebook). Comparisons to the size distribution identified for biodiversity cannot be made until such an analysis is done. As well, assessment of short term block planning opportunities cannot be made until such an analysis is complete. Computer modeling of patch size has also shown that initial patterns established on the landscape are very difficult to change later without having significant timber supply effects.

Linkages and Dependencies

Final landscape unit boundaries and up-to-date harvesting history are required to perform this analysis.

Location

This analysis is required for each landscape unit in the region. Landscape units with the greatest history of development are most urgent.

Schedule (delivery)

At least 50% of the landscape units should be complete by December 31, 2001 with the remainder to be completed in the following year.

Cost

Costs are included in above totals for Activity Description 1.0 for CCLUP Biodiversity Targets.

2000/01	2001/02	2002/03	2003/04	2004/05

1.2 CCLUP Mule Deer Strategy, Objectives And Targets

Issue

Ninety-eight (98) Mule Deer Winter Range (MDWR) management plans require completion to provide short-term and long-term certainty around mule deer habitat conservation targets and timber access availability expected by the CCLUP and integration process. Biophysical mapping is a prerequisite to completion of the plans using the template currently being tested and the key to achieving the required levels of overlap of MDWR habitat, modified harvest prescriptions, and achievement of old seral requirements.

Knowledge Gaps and Needs

Research: Continuation of current work on mule deer habitat/old seral stage attribute identification, particularly in the IDF.

Inventory:

- Complete biophysical mapping of Cariboo Region MDWR's, especially where woodlots are affected.
- Complete/digitize Cariboo Region MDWR Management Plans.

Monitoring: Monitor/analyze effects of implementing MDWR Management Plans (rotational effects/re-entry period) on CCLUP targets.

Linkages and Dependencies

Continuation and completion of this work is linked to filling information gaps for strategic and operational planning requirements for these areas, and to filling information gaps for TSR including: amount, location and timing of available volume; mature and old seral requirements; and WTP requirements.

Location

Region wide

Schedule (delivery)

Completed by 2005.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$160,000	$160,000	$160,000	$160,000	$160,000

1.3 CCLUP Fisheries And Riparian (Stream, Wetland, Lake) Targets

Issues

Fisheries: Continuation of the Fish and Fish Habitat Inventory Program is a critical requirement for meeting strategic and operational planning requirements across the Region. This involves continuation of the Lake Inventory, Reconnaissance (1:20,000) Fish and Fish Habitat Inventory and Intensive (Species Specific) Fish and Fish Habitat Inventory (see attached Activity Descriptions 1.3.1, 1.3.2 and 1.3.3).

Riparian: In addition, lack of adequate classification of the above resources and the lack of an adequate forest inventory (see above) can result in an over/underestimation of the reserve zones (constrained area) associated with streams, wetlands, and lakes and limit the ability of planners to maximize overlaps with other non-timber resource values, such as OGMA's. Several potential solutions to filling this information gap, at various scales, are listed below.

Knowledge Gaps and Needs

- *Fisheries* – Refer to Activity Descriptions 1.3.1, 1.3.2 and 1.3.3.
- *Riparian* – Refer to Activity Description 1.3.4.

Linkages and Dependencies

- *Fisheries* – Linked with filling information gaps for strategic and operational planning as well as TSR.
- *Riparian* – Completion of TRIM 2 mapping for Region

Location

Region wide

Schedule (delivery)

Cost

(Includes costs outlined in Activity Descriptions 1.3.1 to 1.3.6.)

2000/01	2001/02	2002/03	2003/04	2004/05
$2,055,000	$2,055,000	$2,040,000	$1,995,000	$1,995,000

1.3.1 Reconnaissance (1:20,000) Fish and Fish Habitat Inventory

Issue

Reconnaissance (1:20,000) fish and fish habitat inventories provide information that is required for use in landscape and forest development planning. In addition, this inventory methodology has been developed so that data collected from randomly selected field sites within the watershed can be modeled to provide interpretative information for the entire watershed. The interpretative information will be suitable for use in operational planning of forestry activities, including, in many cases, Fish Stream Identification. Starting in 1999, FRBC will no longer fund intensive inventories to classify discrete stream reaches that border proposed roads and cutblocks. Therefore, extrapolated 1:20,000 data will be the primary means of obtaining fish and fish habitat inventory information suitable for operational fish/forestry planning. Reconnaissance 1:20,000 inventory will also allow forest companies to dovetail their FPC operational fish inventories with FRBC funded inventories.

Knowledge Gaps and Needs

- Less than 20% of the region has been inventoried.
- Fish and fish habitat information is critical to planning processes including Sub-Regional Plans, Landscape Unit Planning and Local Area Agreements to streamline riparian assessments.
- Forest companies require information for operational planning.

Linkages and Dependencies

Location

Region wide, with emphasis on Horsefly, Quesnel and Chilcotin Forest Districts. Primary watersheds include the West Road (Blackwater), Quesnel (Horsefly, Cariboo), Willow, Cottonwood/Swift, Chilcotin, Dean, Atnarko, Homathko, Bonaparte and Eagle.

Schedule

Reconnaissance (1:20,000) Fish and Fish Habitat Inventory should continue at regional capacity for the next ten years. At this capacity (approximately 15 sub-drainages) it will take approximately 15 to 20 years to complete the region.

Cost

(Included in above totals for Activity Description 1.3 for CCLUP Fisheries and Riparian (Stream, Wetland, Lake) Targets.)

2000/01	2001/02	2002/03	2003/04	2004/05
$1,400,000	$1,400,000	$1,400,000	$1,400,000	$1,400,000

1.3.2 Lake Inventory and Classification

Issue

The Cariboo MELP Region encompasses approximately 37,000 lakes, of which 4,100 are greater than 5 ha, that could potentially support fish populations. Less than 10% of these lakes have been surveyed. Lakes Classification is an important requirement for all aspects of strategic level planning: sub-regional, landscape unit, operational, as well as TSR (used to define the timber harvesting land base). Lake inventory is a baseline requirement for Lakes Classification processes, and within the Cariboo Region will continue to be a high priority for forest companies, MOF and MELP. Information collected during 1:20,000 watershed-wide lake and stream inventory will indicate where additional lake survey work is required, and additional key lakes outside of priority watersheds must be inventoried to provide information for Lakes Classification Committees and provide baseline information for Wilderness Lakes and recreational management under the CCLUP.

Knowledge Gaps and Needs

- Winter oxygen testing of 200+ lakes per year.
- Full 1:20,000 lake inventories of 50 lakes per year.
- Assessment of key lake fisheries to determine angler use (SLIM), preferences, etc.

Linkages and Dependencies

- Requires staff personnel to provide information to the lakes Classification processes.

Location

Region wide

Schedule

Annual winter oxygen testing effort over the next five years will be reduced to spot checks, re-testing borderline lakes and monitoring key lakes. Lake inventory will be accelerated to address lake classification processes and 1:20,000 watershed inventory. Forest District Lakes Classification processes are expected to continue over the next 5 years.

Cost

(Included in above totals for Activity Description 1.3 for CCLUP Fisheries and Riparian (Stream, Wetland, Lake) Targets.)

2000/01	2001/02	2002/03	2003/04	2004/05
$260,000	$260,000	$245,000	$245,000	$245,000

1.3.3 Intensive (Species-Specific) Fish and Fish Habitat Inventory

Issue

Intensive inventories are required to address priorities of the CCLUP and Regional Fisheries Branch. These will primarily be carried out by MELP but forest companies are encouraged to be involved to ensure that concerns about priority fish species are addressed.

Projects to gather additional information required for designating and managing fish species and habitats under the Forest Practices Code may be identified for funding. Such projects may include, for example, defining in-stream work windows, identifying wildlife (fish) habitat areas or determining the content of general wildlife measures.

Knowledge Gaps and Needs

- Sturgeon distribution and spawning habitat assessment – Fraser River
- Bull trout – West Road, Willow, Quesnel, Chilcotin, Churn, Dean & Cottonwood/Swift; including migration patterns, spawning and rearing areas, physical characteristics, habitat conditions.
- Dolly Varden inventory and monitoring
- Steelhead inventory and monitoring – Chilcotin, Quesnel etc.
- Rainbow trout – Quesnel Lake/Horsefly River
- Habitat inventories to identify sensitive/critical areas requiring protection and specific management actions.
- Species at Risk inventory – Listed species including brassy minnow and chisel mouth chub in the Chilcotin and Horsefly drainages.

Linkages and Dependencies

Location

Region wide

Schedule

Intensive (Species Specific) Fish and Fish Habitat Inventory should continue at a regional capacity for the next ten years.

Cost

(Included in above totals for Activity Description 1.3 for CCLUP Fisheries and Riparian (Stream, Wetland, Lake) Targets)

2000/01	2001/02	2002/03	2003/04	2004/05
$250,000	$250,000	$250,000	$250,000	$250,000

1.3.4 Riparian Targets

Issue

Lack of adequate classification of the above resources and the lack of an adequate forest inventory (see above) can result in an over/underestimation of the reserve zones (constrained area) associated with streams, wetlands, and lakes and limit planner's ability to maximize overlaps with other non-timber resource values, such as. OGMA's. Several potential solutions to filling this information gap, at various scales, are listed below.

Knowledge Gaps and Needs

- Complete surrogate classification of streams, wetlands, lakes across the region for interim analysis of implementation impact pending finalized classification.
- Across-region completion of stream, wetland and lakes classification/digitization/analysis of implementation impact. (Separate funding is not required; stream and wetland classification is licensee responsibility under operational planning. Lake classification is separate public process, as outlined in Activity Description 1.3.2.)
- Re-inventory/sample/digitize and re-analyze forest cover within current reserve zones along streams, wetlands and lakes to more accurately capture opportunities and maximize overlaps with other non-timber resource values, such as OGMA's. (Separate funding is not required; linked to overall need for re-inventory (see Activity Description 3.25.)

Linkages and Dependencies

Completion of TRIM 2 mapping for Region.

Location

Region wide

Schedule (delivery)

Cost

(To complete surrogate classification project; included in above totals for Activity Description 1.3 for CCLUP Fisheries and Riparian (Stream, Wetland, Lake) Targets.)

2000/01	2001/02	2002/03	2003/04	2004/05
$30,000	$30,000			

1.3.5 Digital Fish Inventory

Issue

Requirement for digital fish presence mapping to be available for integration into various planning processes.

Knowledge Gaps and Needs

A large backlog of fish inventory information is presently not available for planning purposes since it is not incorporated into Ministry databases, nor is spatial digital databases in non-Ministry format.

There is a need to incorporate all fish inventory/assessment information into one digital database so it is readily available for strategic and operational planning requirements.

Linkages and Dependencies

Location

Schedule (delivery)

Cost

(Included in above totals for Activity Description 1.3 for CCLUP Fisheries and Riparian (Stream, Wetland, Lake) Targets.)

2000/01	2001/02	2002/03	2003/04	2004/05
$15,000	$15,000			

1.3.6 Overview Fish Inventory for Treaty Areas

Issue

Insufficient data exists within treaty areas to provide First Nations and government negotiators with required information.

Knowledge Gaps and Needs

- Overview inventory information describing fish presence for streams within treaty areas.
- Population assessments for anadromous species.
- Annual fish counts to determine run strength.
- *Output*: Reports and mapping outlining fish species in each watershed of the treaty area.

Linkages and Dependencies

Location

Region wide

Schedule (delivery)

Cost

(Included in above totals for Activity Description 1.3 for CCLUP Fisheries and Riparian (Stream, Wetland, Lake) Targets.)

2000/01	2001/02	2002/03	2003/04	2004/05
$100,000	$100,000			

1.4 CCLUP Visual Targets

Issue

Current visual inventories need to be refined so that only the amount of area required to meet the visual targets is constrained. Unrefined inventories do not permit the maximization of overlaps with other non-timber values and can result in unnecessary constraints in timber access and supply. This issue is applicable across the Cariboo Region and requires the development and use of more sophisticated techniques in the field of visual landscape design and analysis. Several potential solutions to filling this information gap, at various scales, are listed below.

Knowledge Gaps and Needs

- Continuation of the current TRIM 2 project to cover the remainder of the Cariboo Region.
- Test TRIM 2 for its adequacy of depicting visually constrained areas.
- Refinement of existing visual resource inventories, using TRIM 2, to more accurately define, spatially depict and allow analysis of visually constrained areas resulting from strategic planning.
- Visual Effects Modeling – Apply Digital Terrain Modeling to more accurately define visually constrained areas.
- Apply above to SRDZ's only, rather than the whole region.

Linkages and Dependencies

Availability of TRIM 2 mapping.

Location

Region wide

Schedule (delivery)

Completed by 2005.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$50,000	$50,000	$50,000	$50,000	$50,000

1.4.1 Impact of Visuals and Recreation on the Operable Land Base

Issue

TSR uses landscape inventories where they exist and broad zones where there are no landscape inventories.

Knowledge Gaps and Needs

Gap: Broad zones need landscape inventories completed.
Need: Landscape inventories addressing highest priority viewscapes.

Linkages and Dependencies

CCLUP visuals

Location

Region wide

Schedule (delivery)

Completed by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$50,000	$50,000	$50,000		

1.5 CCLUP Caribou Strategy, Objectives and Targets

Issue

Both the eastern and Itcha-Ilgachuz caribou populations within the region are considered regionally and provincially significant and are specifically provided for, with special management, under the CCLUP Higher Level Plan. Work is ongoing to develop strategies that maintain the caribou population and their habitat while integrating other values such as timber harvesting, biodiversity and winter recreation. It is critical that the adaptive management and operational trials be continued to develop methods of timber harvesting which are compatible with maintaining caribou habitat values and achieve the balance described in CCLUP. Caribou targets must be addressed through sub-regional planning processes being undertaken throughout the region.

Knowledge Gaps and Needs

Animal inventory – Continuation and completion of current work on caribou population dynamics and habitat use.

Habitat Inventory – Complete terrestrial ecosystem mapping to allow for an accurate quantification of the distribution, availability and condition of caribou habitat for each population.

Habitat Monitoring – Continue monitoring of adaptive management/operational trials to measure adequacy of timber harvesting prescription for caribou while considering timber harvesting economics, silviculture and access issues. Monitoring at a reduced level should continue after completion of the strategy, in the year 2000, to ensure prescriptions are meeting desired objectives.

Population Monitoring – After completion of the strategy in the year 2000, continue population monitoring at a reduced level to insure animal numbers are being maintained.

Additionally, pre- and post- harvesting surveys are required to monitor and assess success of modified harvest prescriptions.

Linkages and Dependencies

Location

Region wide

Schedule

Caribou strategy to be completed in June 2000. Input to sub-regional planning ongoing until all plans completed. Ongoing monitoring will continue until at least 2005.

Cost

(Includes costs associated with Activity Description 1.5.1, CCLUP Caribou Modified Harvest Monitoring, beginning in 2001/2002.)

2000/01	2001/02	2002/03	2003/04	2004/05
$250,000	$165,000	$165,000	$90,000	$50,000

1.5.1 CCLUP Caribou Modified Harvest Monitoring

Issue
Determine if current management in the Caribou Modified Harvest Area is meeting objectives. This will potentially impact the timber harvesting land base inclusions and exclusions.

Knowledge Gaps and Needs
Gap: There is no current prescription monitoring and assessment.
Need: Pre- and post-harvesting surveys of Caribou Modified Harvest Areas.

Linkages and Dependencies
Linked to caribou modified harvest research.

Location
Region wide – specific to Caribou Modified Harvest Areas.

Schedule (delivery)

Cost
(Included in above totals for Activity Description 1.5 for CCLUP Caribou Strategy, Objectives and Targets.)

2000/01	2001/02	2002/03	2003/04	2004/05
	$40,000	$40,000	$40,000	

1.6 CCLUP Watershed and Fisheries Targets, Objectives and Strategies

Issue

Information is urgently required on the risk to fisheries of recent and future timber harvesting levels and patterns on the landscape. As well, information is lacking on the forest's ability to recover hydrologically after timber harvesting, which in turn affects future timber access.

Knowledge Gaps and Needs

Inventory

- Inventory of indicators and determine measures of hydrologic recovery in various watersheds described in Fisheries Risk Assessment (input to CCLUP integration report) as moderate or high risk.
- Complete more detailed Fisheries Risk Assessment Reports for Bonaparte and Bridge Creek watersheds.
- Complete Interior Watershed Assessment Procedures for CCLUP-identified watersheds.
- Watershed monitoring on high value fisheries streams, such as Horsefly River.
- Inventory of critical fish habitats.

Linkages and Dependencies

Location

Region wide

Schedule (delivery)

Completion by 2005.

Cost

(Includes costs associated with Activity Descriptions 1.6.1, Horsefly River Juveniles Assessment and 1.6.2, Watershed Assessments.)

2000/01	2001/02	2002/03	2003/04	2004/05
$ 185,000	$ 85,000	$ 85,000	$ 50,000	$ 50,000

1.6.1 Horsefly River Juveniles Assessment

Issue

Describe and assess population characteristics of juvenile salmonids inhabiting the Horsefly River system. The goal is to identify the amount, type and actual and potential use of habitat within the watershed by species and life stage. This information will be used to estimate probable egg deposition and escapement associated with present and potential use by reach or tributary.

Knowledge Gaps and Needs

Help identify degraded habitats and critical habitats that limit fish production. This information will provide a partial basis for the development of a habitat restoration and improvement plan that could be implemented in succeeding years. Field sampling will focus on the detailed measurement of habitat characteristics at discrete sites within all reaches to determine if the stream carrying capacity has been impacted and to aid in the design of any habitat restoration strategy.

Linkages and Dependencies

Integrate the results of juvenile assessment results with other project components to form the scientific basis for establishing rainbow trout conservation escapement goals and monitoring protocols.

Location

Horsefly River watershed

Schedule (delivery)

Project duration would be for 3 years.

Cost

(included in above totals for Activity Description 1.6 for CCLUP Watershed and Fisheries Targets, Objectives and Strategies.)

2000/01	2001/02	2002/03	2003/04	2004/05
$ 35,000	$ 35,000	$ 35,000		

1.6.2 Watershed Assessments

Issue

CCLUP requires watershed assessments for the Bonaparte, Bridge, Quesnel River, Cottonwood and Horsefly watersheds. Watershed assessments were formerly funded under the FRBC Watershed Restoration Program.

Knowledge Gaps and Needs

Assessments are incomplete for the Bonaparte and Bridge watersheds.

Linkages and Dependencies

Linked to the Enhancing Environmental Values strategic objective.

Location

Bonaparte and Bridge watersheds

Schedule (delivery)

Completed by March 2001.

Cost

(Included in above totals for Activity Description 1.6 for CCLUP Watershed and Fisheries Targets, Objectives and Strategies)

2000/01	2001/02	2002/03	2003/04	2004/05
$100,000	?	?	?	?

1.7 CCLUP Wildlife Other Than Mule Deer and Caribou

Issue
Described under Activity Descriptions 1.7.1 to 1.7.6.

Knowledge Gaps and Needs
Described under Activity Descriptions 1.7.1 to 1.7.6.

Linkages and Dependencies
Described under Activity Descriptions 1.7.1 to 1.7.6.

Location
Region wide

Schedule
2000-2005

Cost
(Includes costs associated with Activity Descriptions 1.7.1 to 1.7.6)

2000/01	2001/02	2002/03	2003/04	2004/05
$1,330,000	$1,030,000	$1,220,000	$920,000	$1,170,000

1.7.1 CCLUP Furbearer Objectives and Targets (2000-2005)

Issue

A major shortage of information exists on the distribution, abundance and habitat requirements for all biogeoclimatic zones for the 17 different species of furbearers located within the Cariboo Region. The limited information base is especially concerning for low density and low reproductive species such as fisher and wolverine, and for species that require large home ranges, such as lynx and bobcat, as well as fisher and wolverine. Fisher and wolverine are also blue-listed species.

The CCLUP directs that habitats will be managed for furbearers. Due to the lack of information, minimal input has gone into the protection of furbearer habitat in the forest development planning process. The biggest concern with forest development, including silvicultural treatments, is the impact on furbearers from harvesting, and whether the harvest type meets the habitat requirements of furbearers and their prey. There is no preliminary information available on furbearer presence or absence prior to logging. Presence and absence information, as well as habitat types utilized by each species, would be useful to track the impact of forest harvesting on individual species over time.

Knowledge Gaps and Needs

- Presence and absence, density and habitat requirement information is lacking throughout the region for most furbearing species. Without this information, suitable input into the various land based activities that may impact furbearer habitats and their distribution will not occur. Information gaps can be partially filled by establishing a long term (3 to 4 years) snow tracking survey program in various biogeoclimatic zones found in the Cariboo Region. This type of information collection will aid in obtaining presence and absence data. Snow tracking techniques are also available to assess the impact of forest harvesting on furbearers before it occurs.
- A prototype of this kind of information collection was initiated in the Anahim Lake area in 1999. A second year of furbearer track information collection will occur in the winter of 1999/2000. This will be a cooperative project between Yun Ka Whu'ten Holdings Ltd. and the Ministry of Environment, Lands and Parks.

Linkages and Dependencies

In order to meet the CCLUP requirement of managing furbearer habitat, additional information on each species habitat requirements and distribution in the various biogeoclimatic zones is required. Without this information there will continue to be limited input in the process for the protection of furbearer habitat.

Location

Williams Lake TSA, Chilcotin forest district

Schedule

2000-2005.

Cost

(Included in above totals for Activity Description 1.7 for CCLUP Wildlife Strategies for Species Other Than Mule Deer and Caribou.)

2000/01	2001/02	2002/03	2003/04	2004/05
$100,000	$100,000	$100,000	$100,000	$100,000

1.7.2 Inventory for Species and Habitats (including Identified Wildlife and Grasslands)

Issue

CCLUP implementation requires the forest inventory to identify species and habitats at risk and their management needs. Also, consistent with the CCLUP targets, there is a need to conduct site assessments in order to establish Wildlife Habitat Areas (WHA's), as required to protect these species and habitats.

Many of the species at risk in the region are found on the grasslands of the region. Inventory and research are required to further identify species and habitats of concern and to develop management requirements in grassland habitats. This is critical for maintaining grassland habitats to address the forest encroachment issue – additional research and inventory are required to identify areas of concern and to develop management requirements.

Knowledge Gaps and Needs

- Conduct inventories of wildlife species at risk and Identified Wildlife in the Cariboo Region to meet CCLUP and FPC obligations; particular attention should be directed to grassland species.
- Conduct detailed site assessments in order to determine WHA requirements for Identified Wildlife.
- Conduct inventory to identify areas of significant forest encroachment of grasslands in the region.

Linkages and Dependencies

In order to meet CCLUP (p. 156 and 158) and FPC requirements, an inventory to identify species and habitats at risk is of high importance. Filling this knowledge gap will help in overall forest and land use planning because it will remove some of the uncertainty in planning development activities in different areas where species at risk issues are a concern.

Location

Region wide

Schedule (delivery)

There is such a large number of species and habitats to inventory that completion of all species at risk inventories cannot be done within a five year period and some monitoring work will be required on an ongoing basis. However, the highest priority inventories of grasslands and red and blue-listed identified wildlife will be targeted to be completed within a five year period.

Cost

(included in above totals for Activity Description 1.7 for CCLUP Wildlife Strategies for Species Other Than Mule Deer and Caribou.)

2000/01	2001/02	2002/03	2003/04	2004/05

$200,000	$200,000	$200,000	$200,000	$200,000

1.7.3 CCLUP Moose Strategy, Objectives and Targets (2000-2005)

Issue

As a requirement of the CCLUP, wetlands designated as important to moose, especially those utilized during the winter months, are required be identified throughout the Cariboo Region. Based on the wetland's size and importance to moose, forested buffers around the wetland and forest harvesting techniques within or adjacent to the buffer will be established to meet thermal and security cover requirements for moose. In conjunction with Riverside Forest Products, this project was initiated in 1999 and wetlands have been classified using the Broad Wetland Classification System for approximately nine 1:20,000 map sheets. Criteria are currently being developed to denote a wetland's importance to moose. Wetland classification will also be initiated commencing in the fall of 1999 in the Anahim Lake area. This will be a cooperative project between Yun Ka Whu'ten Holdings Ltd. and the Ministry of Environment, Lands and Parks.

In order to aid in determining an adequate buffer distance on the perimeter of wetlands to meet moose thermal and security cover requirements, additional information on actual moose use of the wetland, and the association to the buffer is required. The CCLUP suggests that a 200 m buffer on the perimeter of important wetlands may be required on key wetland and riparian habitats. In order to adequately determine an appropriate buffer distance, GPS collars will be placed on moose in specified areas, and moose use in relation to different buffer widths will be monitored. Monitoring their use of the buffer will also aid in developing forest harvesting techniques within and adjacent to the buffer.

Completing classification of the all the wetlands will be an expensive undertaking. There are approximately 869 mapsheets at 1:20,000 scale covering the Cariboo region and the approximate cost to classify wetlands on one mapsheet is $3000. It is highly unlikely that wetland classification will be completed any time soon for the entire region. In the interim, however, obtaining information on moose utilization of potentially key wetlands can be obtained through actual inventory of moose during the winter months. The inventory information will aid in locating areas of high moose use in association with wetlands or wetland complexes. Moose utilization of a particular area is one of the criteria used to denote a wetland's importance. Areas selected for wetland classification will receive priority for inventory.

Knowledge Gaps and Needs

- The CCLUP requires that key wetlands be identified for moose throughout the region. It will take several years to complete the classification and key areas will be mapped annually.
- There is inadequate information available to determine an appropriate buffer distance on the perimeter of key wetlands to meet thermal and security cover requirements for moose. Actual monitoring of individual animals fitted with GPS collars is required to obtain this type of information. The collared animals will be monitored for a period of up to three years and several animals collared in various biogeoclimatic zones may be required.
- In order to build the data base and facilitate adopting criteria for determining a wetland's importance to moose, ongoing inventory in the areas where wetlands will be classified is

required. Moose use of the various wetlands will vary annually, which is a reflection of winter snow depths and temperature. The inventory will aid in identifying areas of high moose concentrations and their association to wetlands in the area.

Linkages and Dependencies

In order to meet the CCLUP requirement of identifying key wetlands for moose, the research (GPS collars) and the inventory components are of high importance. These two components are required to develop the selection criteria for denoting a wetland's importance to moose. Without this information, establishing a wetland's importance to moose and selecting an adequate buffer distance for thermal and security cover requirements could be highly subjective and open to question.

Location

Williams Lake TSA

Schedule

2000-2005. Wetland classification will need to continue after 2005.

Cost

(Included in above totals for Activity Description 1. 7 for CCLUP wildlife other than mule deer & caribou strategies) I'll check that my revision is OK before changing another one.

2000/01	2001/02	2002/03	2003/04	2004/05
$350,000	$350,000	$350,000	$350,000	$350,000

Annual Cost by Component

Wetland Classification	$100,000
Research (GPS collars etc.)	$150,000
Inventory	$100,000

1.7.4 Mule Deer Population Inventory Objectives and Requirements

Issues

Mule Deer are considered as both regionally and provincially significant species and are specifically provided for with special management in the CCLUP Higher Level Plan. In the CCLUP, one of the stated objectives for mule deer is to maintain their winter ranges in a condition to support the regional mule deer population of 25,000 deer through critical winter conditions. Although some population trend inventories have been conducted in recent years, there are still considerable knowledge gaps for some areas and populations. Population inventories are needed to determine whether the regional population objectives are being met with management practices described in the CCLUP, Regional Mule Deer Winter Strategy and CCLUP integration report, as well as the detailed winter range management plans. Mule deer are difficult to inventory due to their use of forested habitats (ie. mature and old Douglas-fir forests); therefore, it is also necessary to develop sightability to complement the current inventory methodologies (RIC standards) in order to accurately measure deer population levels in the region. As well, there are other knowledge gaps which could also be addressed, such as migratory habits of various deer populations and human- and non-human-caused mortality rates.

Knowledge Gaps and Needs

Animal Inventory:

- Need to determine the current status of the deer population in the region. This would require conducting extensive aerial and ground inventory of winter and spring ranges in conjunction with developing a sightability estimator through the use of radio telemetry work, and sightability trials to develop a sightability model for the different winter and spring habitats.
- Long-term monitoring of a representative proportion of the regional deer population would be required to detect population fluctuations and monitor herd status and health over the long term.

Migration and Mortality Studies:

- This would require radio collaring a sample of deer from some of the various sub-populations and monitoring migration habits and causes of mortality over a period of time. Some of this could be conducted in conjunction with the inventory and sightabilty models at very little additional cost.

Linkages and Dependencies

Location

Region wide

Schedule

Not established at this time.

Cost

(Included in above totals for Activity Description 1 7 for CCLUP wildlife other than mule deer & caribou strategies.) FIX

2000/01	2001/02	2002/03	2003/04	2004/05
$250,000	$200,000	$200,000	$100,000	$100,000

1.7.5 Grizzly Bear Population and Habitat Inventory Requirements

Issue

CCLUP implementation requires research and inventory on grizzly bear habitat and habitat protection needs (p. 161) in order to support resource management and future integrated resource management decisions. Grizzly bear are an identified wildlife species in the Identified Wildlife Management Strategy. Population inventories are required to determine whether population unit objectives (recovery or maintenance of populations) are being met with the land use management strategies implemented through the CCLUP. Particularly critical are populations that are considered threatened, such as the South Chilcotin population and parts of the Blackwater-West Chilcotin population.

Knowledge Gaps and Needs

- Conduct inventories of grizzly bear populations in the interior Cariboo population to establish knowledge of current population size and relative abundance, and to determine areas of critical grizzly bear habitat, with the priority for inventory based on the current population status (ie. threatened populations have higher priority).
- Map and classify grizzly bear habitat and conduct overall habitat effectiveness evaluations in order to be able to evaluate individual Wildlife Habitat Area candidates for foraging and security areas.

Linkages and Dependencies

In order to meet CCLUP (p. 156 and 158) and FPC requirements, inventory of grizzly bear populations and habitats is of high importance. Filling this knowledge gap will help in overall forest and land use planning because it will remove some of the uncertainty in planning development activities in different areas where species at risk issues, such as for grizzly bear, are a concern.

Location

Region wide, but priority areas are (1) South Chilcotin, (2) Blackwater-West Chilcotin and (3) Quesnel Lake-Quesnel Highlands.

Schedule (delivery)

Completion of inventory in top three priority areas within six years. Large population inventories in alternating years with analysis in intervening years.

Cost

(Included in above totals for Activity Description No. 7 for CCLUP wildlife other than mule deer & caribou strategies.) FIX

2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
$300,000	$50,000	$300,000	$50,000	$300,000	$50,000

1.7.6 Bighorn Sheep and Mountain Goat Inventory Objectives and Requirements

Issues

California bighorn sheep and mountain goats are considered to be both regionally and provincially significant species and are included in the Identified Wildlife Management Strategy. Although some population inventories have been conducted in recent years, there are still considerable knowledge gaps for some areas and populations. Population and habitat inventories are needed to aid in sub-regional and landscape planning levels. Critical areas of importance are identifying lambing and natal areas, winter ranges and mineral licks, as well as population monitoring.

Knowledge Gaps and Needs

Bighorn sheep

Habitat inventory:
- Locating and mapping of key lambing sites and winter ranges.
- Complete terrestrial ecosystem mapping (TEM) to allow for accurate quantification of the distribution, availability and condition of key habitats. Some small gaps remain (partial mapsheets) and some older TEM may have to be updated.

Population monitoring:
- Continue periodic population monitoring (particularly Churn Creek herd) to ensure populations are being maintained at adequate levels.

Mountain goats

Animal inventory:
- Conduct some baseline population inventory to determine status of mountain goats and the extent of their current range within region. A considerable portion of the region has not previously been inventoried and is lacking basic information on current population status (presence and absence) and extent of range use.

Habitat inventory:
- Locating and mapping of key natal sites and winter ranges. This information would be valuable for landscape planning purposes to establish timing windows to mitigate concerns regarding industrial and tourism operations near these critical areas during sensitive natal and winter periods. In the case of natal areas, this would aid in the establishment of Wildlife Habitat Areas for these critical sites.
- Conduct TEM in some selected areas to allow for accurate quantification of the distribution, availability and condition of key habitats. Although there is considerable overlap with caribou mapping some gaps remain and some older TEM may have to be updated.

Population monitoring:
- Continue some periodic population monitoring to ensure populations are being maintained at adequate levels.

Linkages and Dependencies

Location
Region wide

Schedule

- Animal inventory and habitat mapping by 2005.
- Periodic population monitoring – ongoing.

Cost
(included in above totals for Activity Description 1. 7 for CCLUP wildlife other than mule deer & caribou strategies) FIX

2000/01	2001/02	2002/03	2003/04	2004/05
$130,000	$130,000	$70,000	$120,000	$120,000

Bighorn Sheep

Habitat Inventory:
2000/01 = $60,000
2001/02 = $60,000

Population Monitoring:
Ongoing = $5,000 – $10,000/yr

Mountain Goat

Animal Inventory and Habitat Mapping:
2000/01 = $50,000
2001/02 = $50,000
2002/03 = $50,000
2003/04 = $100,000
2004/05 = $100,000

Population Monitoring:

Ongoing beyond 2005 – $10,000/year

1.8 Integration of CCLUP Targets in Sub-Regional Planning

Issue

The CCLUP states that sub-regional planning must be completed to integrate all the strategies, targets and objectives of the plan at a more appropriate scale than the whole region. Detailed GIS analysis is required to complete the requirement and demonstrate that integrating all the available resource information and public input has met the sub-unit targets of the CCLUP.

Knowledge Gaps and Needs

Lack of modeling results produced by an ArcInfo GIS analysis to demonstrate consistency of sub-regional planning with CCLUP targets, objectives and strategies.

Linkages and Dependencies

TSR – TSR 3 will be mandated to model full implementation of the CCLUP. This can only be accomplished if the results of sub-regional planning can be analyzed to demonstrate consistency with the CCLUP and therefore incorporated into operational direction through landscape unit objectives.

Location

Region wide

Schedule (delivery)

Must be completed by 2005.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$150,000	$150,000	$150,000	$150,000	$150,000

1.9 Water Quality and Quantity Information

Issue

Deficiencies in the existing hydrometric/water quality monitoring networks in the Cariboo region can result in the use of inadequate hydrologic parameters by timber licensees. This in turn can result in environmental degradation or contravention of MELP's water quality objectives. In recognition of resource limitations for water quality monitoring in the hydrologically diverse Cariboo region, MELP has prioritized watersheds and placed key hydrometric/water quality stations in catchments of potential community watersheds and in actively harvested, high value fisheries streams. These priorities were based on a $200,000 FRBC-funded gap/needs analysis.

In addition, refer to attached Activity Descriptions 1.9.1 and 1.9.2 for two ongoing water quality and quantity regarding Horsefly River suspended sediment concentrations (1.9.1) and snow accumulations and melt in high elevation forests in the Horsefly Forest District (1.9.2).

Knowledge Gaps and Needs

- Refer to attached Activity Descriptions 1.9.1 and 1.9.2.
- Four automated water quality/hydrometric stations (Windy Creek, Bridge Creek, Sheridan Creek, Judson Creek) have been established with an initial investment cost of approximately $450,000 from FRBC (including cost of gaps/needs analysis). Funding of $12,000/year for each station is required to cover the operating costs to continue this program.
- A fifth station has been purchased and will be installed in 1999, which will require $12,000 per year in operating costs.
- A hydrometric station operating on Joe Ross Creek will require further operating costs and MELP is proposing to install a climate station at this site.
- Funding is needed to complete a water quality assessment and objectives report for Clinton Creek (data has already been collected).
- Installation and operation of two new hydrometric stations in 2001 with the addition of a climate station to one of these hydrometric stations in 2002.

The data from the stations listed above will:

- Enable timber licensees to meet legal obligations for designing roads, culverts, and stream crossings.
- Provide baseline data necessary to determine the impact of logging activities on drinking water quality and quantity.
- Aid in establishing water quality objectives for streams in community watersheds and streams with high fisheries value.
- Support operational, strategic and landscape level forest planning as well as watershed restoration planning and evaluation.

Linkages and Dependencies

Refer to attached Activity Descriptions 1.9.1 and 1.9.2.

It is necessary to fulfill the requirements of the Water Quality/Water Quantity Strategy under the CCLUP. To date, the Cariboo region is very under-represented in terms of hydrometric and water quality data (as identified by gaps/needs analysis).

Location
Region wide

Cost and Schedule

For key hydrometric/water quality/climate stations and Clinton Creek report:

Region	Project	2000/01	2001/02	2002/03	2003/04	2004/05
MELP Cariboo Region	4 operating stations @ $1200 each (described above)	$48,000	$48,000	$48,000	$48,000	$48,000
	New hydrometric/ water quality station	$12,000	$12,000	$12,000	$12,000	$12,000
MELP Thompson/ Nicola Region	Joe Ross Creek hydrometric station	$6,830	$7,700	$7,700	$7,700	$7,700
	Complete report for Clinton Creek	$6,600				
	Climate station for Joe Ross station		$33,000	$8,800	$8,800	$8,800
	Install and operate two hydrometric stations		$60,500	$17,600	$17,600	$17,600
	Install new climate station			$8,250		
	TOTAL	**$73,430**	**$161,200**	**$102,350**	**$94,100**	**$94,100**
	Additional costs for Horsefly River sedimentation and Horsefly Forest District snow accumulation/melt projects	$105,000	$191,200	$132,350	$124,100	$124,000

1.9.1 Monitoring Harvest Impacts on the Horsefly River

Issues
Land use can increase erosion and suspended sediment concentrations in streams, which can have a detrimental effect on fish. The purpose of this project is to document suspended sediment concentrations in some of the main streams within the Horsefly River watershed. Repeated sampling has been done at 11 locations on the Horsefly River, Moffat Creek, McKinley Creek and McKusky Creek using standard methods described in the Water Survey of Canada. All sampling locations are at bridges. Sampling has been carried out every year since 1994 with sampling frequency ranging from twice per week in the spring to once ever two or three weeks in late summer and fall.

This information will allow for the detection of the effects of natural and human related transient events, such as landslides and long-term changes in land use.

Knowledge Gaps and Needs
Need continuation of suspended sediment sampling on the Horsefly River.

Linkages and Dependencies
Linked to the Enhancing Environmental Values strategic objective.

Location
Williams Lake TSA, Horsefly Forest District.

Schedule (delivery)
Continuous annual project.

Cost
(Included in above totals for Activity Description 1.9, Water Quality And Quantity Information.)

2000/01	2001/02	2002/03	2003/04	2004/05
$20,000	$20,000	$20,000	$20,000	$20,000

1.9.2 Hydrological Inventories: Snow Accumulations and Melt in High Elevation Forests

Issue

Effects of Partial Harvesting on Snow Accumulations and Melt in a High Elevation Harvest
Timber harvesting tends to increase the amount of snow that accumulates on the ground. In a high snowpack area, such as the ESSF, this can result in a large increase in the amount of spring snowmelt and the magnitude of spring floods. This project initially was funded under the FRDA program and then under the FRBC research program (silvicultural systems research) until 1999.

Knowledge Gaps and Needs

The purpose of this project is to document how the different sizes of openings affect the amount of snow that accumulates and the rate at which it melts. The amount of water being stored in the form of snow is measured at intervals throughout the spring at selected plots within the research trial. This monitoring has been repeated between early April and early June every year since 1994.

Linkages and Dependencies

Location

Horsefly Forest District

Schedule (delivery)

Continuous annual monitoring.

Cost

(Included in above totals for Activity Description 1. 9, Water Quality And Quantity Information.)

2000/01	2001/02	2002/03	2003/04	2004/05
$10,000	$10,000	$10,000	$10,000	$10,000

1.10 CCLUP Grazing Targets

Issue

CCLUP states that current Animal Unit Months (AUM's) will be maintained. Within the context of the integration of all the resource uses within the CCLUP, information is lacking about the effects on grazing of meeting the various targets of the CCLUP and the potential impacts of grazing on the other resources, such as alpine/rare forest vegetation complexes/rare grassland communities. Grasslands are additionally at risk from timber encroachment.

Knowledge Gaps and Needs

- Monitoring of effects of implementing other CCLUP targets on grazing targets.
- Inventory of current grazing impacts on alpine/rare forest/rare grassland communities.
- Range Reference establishment and monitoring to scientifically determine grazing impacts.
- Inventory of grassland timber encroachment areas and development of strategies to mitigate the loss of grassland habitat

Linkages and Dependencies

Location

Region wide

Schedule (delivery)

Continuous annual program.

Cost

(Includes costs associated with Activity Description 1.10.1.)

2000/01	2001/02	2002/03	2003/04	2004/05
$85,000	$85,000	$85,000	$45,000	$45,000

1.10.1 Preservation of Open Range

Issue

There will be a reduction to the timber harvesting land base to meet CCLUP grazing targets for TSR3.

Knowledge Gaps and Needs

Gap: Amount of encroachment since the benchmark date (early 1960's).

Need:
1. Assessment of encroachment since 1960's.
2. Assessment of area needed to meet CCLUP grazing targets.

Linkages and Dependencies

Linked to CCLUP grazing targets.

Location

Grazing Targets – Region wide
Encroachment – Williams Lake and 100 Mile House TSA's.

Schedule (delivery)

Complete by 2003.

Cost

(Included in above totals for Activity Description 10.0, CCLUP Grazing Targets.)

2000/01	2001/02	2002/03	2003/04	2004/05
$20,000	$20,000	$20,000		

1.11 CCLUP Tourism, Backcountry and Recreation Targets

Issue
There are currently large information gaps in the tourism and recreation knowledge base, making it difficult to implement the CCLUP and ensure that the balance of targets is met. Inventories of present use and future opportunities are required to fully implement the CCLUP.

Knowledge Gaps and Needs
Inventory:

- Conduct tourism/recreation opportunity studies in each of the five Cariboo Forest Region districts to supply information on current and future use.

Linkages and Dependencies

Location
Region wide

Schedule (delivery)
Completion by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$150,000	$50,000	$50,000		

1.12 CCLUP Wildcraft Targets

Issue

Information is unavailable on the extent of current uses and potential use to allow implementation of the CCLUP with regards to wildcraft.

Knowledge Gaps and Needs

Inventory

- Inventory pine mushroom sites for implementation of the wildcraft targets.
- Inventory and monitoring of effects of timber harvesting on pine mushrooms to aid in determining the silvicultural needs for pine mushroom production.

Linkages and Dependencies

Location

Region wide

Schedule (delivery)

Completion by 2005.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$10,000	$10,000	$10,000	$10,000	$10,000

1.13 CCLUP Target Achievement Monitoring

Issue

One requirement of the CCLUP Higher Level Plan is the ability to monitor and report on the effectiveness of the targets, objectives and strategies mandated by the CCLUP and currently being implemented across the Cariboo region. As the CCLUP is operationalized, information on results at the CCLUP sub-unit level must be collected and analyzed for reports to agencies (Inter-Agency Management Committee) and stakeholders (Regional Resource Board) responsible for implementation of the CCLUP. There is currently no methodology or mechanism in place to collect or analyze the required information.

Knowledge Gaps and Needs

Monitoring:

- Collect resource information, analyze and report on results of CCLUP implementation through use of GIS system at intervals of one, two and five years. Measure potential effects on long-term target achievement.

Linkages and Dependencies

Location

Region wide

Schedule (delivery)

Completion by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$50,000	$20,000	$20,000		

2.0 Aboriginal Issues Activity Summaries

2.1 Aboriginal Traditional Land Use

Issue

Traditional Use Studies (TUS) enable First Nations to identify, catalogue and map their traditional land use activities and sites within their traditional territory. TUS's are a critical component of the province's legal obligation to manage for aboriginal rights and title when conducting land and resource management activities.

Knowledge Gaps and Needs

The Tsilhqot'in Nation (TNG) will be continuing a TUS, started in the last fiscal year, that is expected to take three years to complete. The following First Nations are anticipated to choose to conduct TUS's within the next five years: Ulkatcho First Nation, Red Bluff (or Lhtako) First Nation, Nazko Band and Whispering Pines Band. (Although the Whispering Pines Band is located within the Kamloops Forest District, its traditional use area is within the Cariboo Forest Region. Thus the band may choose to initiate a TUS through either the Kamloops or Cariboo regions.)

Linkages and Dependencies

No dependencies.

Location

- Tsilhqot'in Nation
- Ulkatcho First Nation
- Red Bluff or Lhtako First Nation
- Nazko Band
- Whispering Pines Band

Schedule (delivery)

TNG to be completed by 2001. All others to be completed by 2005.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$1,100,000	$1,100,000	$600,000		

2.2 Archaeological Inventories

Issue

Archaeological Inventory Studies

AIS's are intended to improve the understanding of the distribution of archaeological sites in a particular area, allowing for more efficient and effective identification, protection and management of archaeological sites in forest planning. This objective is achieved by:

- Inventorying archaeological sites in a representative sample of study unit.
- Ground-truthing the assumptions and criteria used in GIS-based archaeological potential models.
- Addressing archaeological survey data gaps identified by the Archaeology Branch
- Integrating local First Nations knowledge of archaeological sites in the study area.

During the fiscal year 1999/2000 potential AIS's for the year 2000 will be identified in conjunction with First Nations, districts, Archaeology Branch and archaeological consultants. The identified projects will then be ranked.

Archaeological Overview Assessments

In the fiscal year 1998, AOA's were conducted in the Cariboo Forest Region. The GIS-based models of archaeological potential will be used to determine the level of archaeological assessments required in various areas prior to land or resource development activities. As the level of archaeological knowledge of the Cariboo Forest Region increases, a periodic review of the archaeological potential model is required. This review will enable the model to be systematically refined so that it becomes more accurate and specific. Depending on the level of archaeology conducted over the next few years, this review will be carried out in the next two to five years.

Knowledge Gaps and Needs

AIS's on a priority basis.

Linkages and Dependencies

TRIM mapping is required.

Location

Region wide. Specific locations are yet to be identified.

Schedule (delivery)

Completed by 2005.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$500,000	$500,000	$500,000	$500,000	$500,000

3.0 Timber Supply Review Activity Summaries

3.1 TRIM 2 Base Mapping

Issue
Up-to-date base mapping is required for the completion of several CCLUP and TSR issues and activities.

Knowledge Gaps and Needs
Continuation of the TRIM 2 program is required.

Linkages and Dependencies
The following all require completion of TRIM 2 mapping:
- CCLUP wetland, stream and lakes classification
- TSR stream and lakes classification
- CCLUP and TSR riparian impacts
- Old Growth Management Areas
- Wildlife tree patches

Location
Region wide

Schedule (delivery)
Complete by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$500,000	$500,000	$500,000		

3.2 Impact of Streams on Operable Land Base

Issue
The amount of area in stream reserves is unknown, since most streams are not classified. TSR3 will model streams based on TRIM 2 or classified stream data.

Knowledge Gaps and Needs
Stream classification, both predictive (based on TRIM 2 mapping) and field verification.

Linkages and Dependencies

- Linked to CCLUP Riparian Classification.
- Requires TRIM 2 mapping.

Location
Region wide

Schedule (delivery)
Complete by 2003.

Cost
Covered by CCLUP Riparian (1.3.4)

2000/01	2001/02	2002/03	2003/04	2004/05

3.3 Riparian Impacts on Operable Land Base

Issue

TSR3 will model Riparian Management Areas (RMA's) and Riparian Management Zones (RMZ's). This will require more detailed assessment to reflect current operation conditions than CCLUP currently requires.

Knowledge Gaps and Needs

- RMA's are not mapped (wetlands and streams).
- RMA classification (GIS analysis) and mapping based on stream classification.

Linkages and Dependencies

- Linked to CCLUP riparian classification.
- Requires TRIM 2 mapping.
- Dependent on stream classification and CCLUP wetland mapping.

Location

Region wide

Schedule (delivery)

Completion by 2003.

Cost

Covered by CCLUP Riparian (1.3.4)

2000/01	2001/02	2002/03	2003/04	2004/05

3.4 Unquantified Losses of Harvestable Volume

Issue

TSR3 will model average annual catastrophic losses to insects over the last 20 years.

Knowledge Gaps and Needs

Continuation of strategic forest pest inventories, such as the annual aerial survey for mountain pine beetle.

Linkages and Dependencies

Location

Region wide, TSA specific.

Schedule (delivery)

Complete by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$150,000	$150,000	$150,000	$150,000	$150,000

3.4.1 Unsalvaged Volume Losses

Issue

TSR uses unsalvaged volume losses in the determination of Allowable Annual Cut (AAC) by reducing annual available volume by the unsalvaged amount. Accurate estimation has direct effect on the AAC.

Knowledge Gaps and Needs

Gap: Gross volume losses to fire, wind and insects are uncertain.

Needs: 1. Approved survey methods for gross losses.
2. Methods to track salvage.

Linkages and Dependencies

Location

Region wide, TSA specific.

Schedule (delivery)

Completed by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$20,000	$20,000	$20,000		

3.5 Managing for Timber and Non-Timber Values in Systems Susceptible to Mountain Pine Beetle

Issue

Epidemic outbreaks of mountain pine beetle (MPB) have occurred several times since the early 1980s in the region, especially in the SBPS zone. The death of extensive areas of mature and old lodgepole pine has threatened biodiversity and other wildlife values and eroded timber values. The salvage of beetle-killed timber has also led to extensive cutblocks and serious fragmentation in some landscapes. In the Williams Lake TSA, the establishment of incentive licenses to harvest beetle-killed timber has also created a serious shortfall in timber supply in the coming decades.

Knowledge Gaps and Needs

Over the past 30 years forest resource managers have become very competent at controlling fire but far less successful at controlling insect outbreaks. Consequently, endemic insects such as the mountain pine beetle have apparently replaced fire as the primary natural disturbance agent in ecosystems like the SBPS. Annual weather patterns can have a major effect on beetle populations. Conversely, salvage efforts over the past 15 years have not served to control epidemic outbreaks of beetles.

A workshop is needed to bring together experts on mountain pine beetle research and management to explore alternative approaches. The objectives would be to develop assessment and management systems, including harvesting, that provide more stable timber flows and retain suitable mature and old forest retention on the landscape where beetles are present.

Linkages and Dependencies

Current information regarding MPB biology, control methods and harvesting flexibility is required. Case studies from other parts of BC and the northwest US should be examined for their merits and applicability in the Cariboo-Chilcotin.

Location

Applicable to the SBPS, SBS and MS zones.

Schedule (delivery)

This workshop should be held at the earliest possible date. Organization on an international level would require scheduling in 2000.

Cost

Covers facilities for holding the workshop and publications of proceedings.

2000/01	2001/02	2002/03	2003/04	2004/05
$30,000				

3.6 Area Removal from the Timber Harvesting Land Base for Roads

Issue

TSR3 will model productive area lost to roads resulting from access needed for harvesting.

Knowledge Gaps and Needs

- The total amount of area lost to roads is unknown.
- An inventory update is required to add new roads and update the coding of existing roads to ensure accurate accounting of road losses.

Linkages and Dependencies

Location

Region wide, TSA specific.

Schedule (delivery)

Continuous annual program.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$300,000	$300,000	$300,000	$300,000	$300,000

3.6.1 Lack of Current Information in Forest Inventory

Issue
Definition of the operable land base (*needs more explanation)*

Knowledge Gaps and Needs
Gap: Current *land* ownership may be out of date.
Need: Inventory update

Linkages and Dependencies
Linked to road inventory project (inventory update captures all administrative layer updates including and ownership as well as forest cover depletions).

Location
Region wide

Schedule (delivery)
Entire region is updated on a two year cycle (50% of each letter block each year).

Cost.
No additional cost, since costs are included in Roads update (3.6.1).

2000/01	2001/02	2002/03	2003/04	2004/05

3.7 Growth and Yield

Issue

Growth and yield samples in natural stands have been established throughout the province since the early 1970's. Re-measurements are scheduled on a 10 year basis. The re-measurement data is used to calibrate the variable density yield program (VDYP) model. In order to ensure the retention of the investment in establishments, re-measurements must be carried out as scheduled. As the frequency of re-measurement increases, the value of the investment in permanent sample plots also increases.

Knowledge Gaps and Needs

Re-measurement of permanent sample plots.

Linkages and Dependencies

Calibration of VDYP model used to project volume of natural forest stands in TSR.

Location

Region wide by forest district

Schedule (delivery)

	No. of Permanent Sample Plots					
Fiscal Year	Quesnel District	Williams Lake District	Horsefly District	100 Mile House District	Chilcotin District	Total
2000/01	136	0	0	1	0	137
2001/02	18	14	0	34	1	67
2002/03	3	28	15	29	14	89
2003/04	10	10	10	10	10	50
2004/05	10	3	16	20	4	53

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$195,000	$100,000	$120,000	$70,000	$75,000

3.8 Lack of Current Information in Forest Inventory

Issue

In the Inventory data base regenerated stands carry the site index of the stand that was harvested. Results from the Old Growth Site Index (OGSI) project indicate that the site index of regenerated lodgepole pine stands may underestimated by as much as 5-6 site units, which could result in possible increases to long term harvest levels of 22% (Williams Lake TSA) and in management units where no short-term falldown is forecast, a possible short-term allowable cut effect of 4% (100 Mile House TSA) to 10% (Quesnel TSA).

Knowledge Gaps and Needs

Gap: True site index of regenerated stands is unknown
Need: Sampling for TSR adjustment purposes (SIBEC).

Linkages and Dependencies

Linked to Sustainable Harvest strategic objective, OGSI (indicates what adjustments may be possible), VRI sampling may be useful where appropriate. Funding will be covered under the Sustainable Harvest strategic objective.

Location

Region wide.

Schedule (delivery)

Completion by 2003

Cost

2000/01	2001/02	2002/03	2003/04	2004/05

3.9 Impact of Douglas-fir Harvest Rules on Mule Deer Winter Ranges and Non-Mule Deer Winter Ranges – Stand Structure Mapping

Issue
Mule Deer Winter Ranges (MDWR) and non-Mule Deer Winter Range Douglas-fir stands are modeled in TSR. Significant volumes are retained within fir stands, which may be available for harvest in the future, if stand structure attributes are clarified.

Knowledge Gaps and Needs

- Stand structure attributes require further study.
- Stand structure mapping and terrestrial ecosystem mapping are also required.

Linkages and Dependencies
Dependent on Old and Mature plus Old research

Location
Region wide

Schedule (delivery)
Completion by 2003.

Cost
Covered by CCLUP Mule Deer (1.2).

2000/01	2001/02	2002/03	2003/04	2004/05

3.10 Impact of Douglas-fir Harvest Rules on Mule Deer Winter Ranges and Non-Mule Deer Winter Ranges – Stand Structure Basal Area Calculations

Issue
Mule Deer Winter Ranges (MDWR) and non-Mule Deer Winter Range fir stands are modeled in TSR. Significant volumes are retained within fir stands, which may be available for harvest in the future. Basal area has the potential to be a surrogate to reflect some of stand structure attributes needed to achieve MDWR objectives.

Knowledge Gaps and Needs
Basal area calculations

Linkages and Dependencies

Location
Region wide

Schedule (delivery)
Completion by 2003.

Cost
Covered by CCLUP Mule Deer (1.2).

2000/01	2001/02	2002/03	2003/04	2004/05

3.10 Impact of Douglas-fir Harvest Rules on Mule Deer Winter Ranges and Non-Mule Deer Winter Ranges – Stand Structure – Old and Mature plus Old

Issue

Mule Deer Winter Ranges (MDWR) and non-Mule Deer Winter Range fir stands are modeled in TSR. Significant volumes are retained within fir stands, which may be available for harvest in the future.

Knowledge Gaps and Needs

Gap: Definition of stand structure attributes that satisfy Old and Mature plus Old.
Need: Inventory and mapping of existing fir stand meeting Old and Mature plus Old .

Linkages and Dependencies

Dependent on stand structure mapping.

Location

Region wide

Schedule (delivery)

Completion by 2003.

Cost

Covered by CCLUP Mule Deer(1.1) and Biodiversity (1.2)

2000/01	2001/02	2002/03	2003/04	2004/05

3.12 Projections of Future Volumes of Regenerated Stands

Issue

Volumes of currently projected regenerated stands may underestimate true yield or the productive capacity of the sites they occupy.

Knowledge Gaps and Needs

Gap: There is no currently approved monitoring methodology.
Need: Review of monitoring methodologies from other jurisdictions and recommendations for development of acceptable methodology.

Linkages and Dependencies

- Linked to VRI monitoring program and SIBEC.
- Dependent on approval of methodology by MOF Research and Resources Inventory Branches.

Location

Province wide

Schedule (delivery)

Completion by March 2001.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$10,000				

3.13 Ability to Predict Harvestable Volumes from Selection Harvest Areas

Issue

TSR does not currently model selection harvesting well. Unrealized management and harvesting potential may be resulting in foregone opportunities.

Knowledge Gaps and Needs

Gap: Lack of a model that will predict harvestable volumes in selection harvest areas on a local basis.

Need: Data collection (sampling) to localize Prognosis BC.

Linkages and Dependencies

Linked to stand structure of drybelt Douglas-fir stands.

Location

Region wide

Schedule (delivery)

Completion by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$100,000	$100,000	$100,000		

3.14 Riparian Impacts on Riparian Management Area/Wildlife Tree Patch Overlaps on the Operable Land Base

Issue

TSR2 assumed a % overlap of Riparian Management Areas (RMA's) and Wildlife Tree Patches (WTP's) based limited sampling to project overlaps. Improved accuracy is needed for TSR3.

Knowledge Gaps and Needs

Amount of overlap between RMA's and WTP's is unknown. Overlap inventory (GIS analysis) is needed.

Linkages and Dependencies

Dependent on RMA classification.

Location

Region wide by TSA and BEC zones.

Schedule (delivery)

Completion by 2003.

Cost

Covered by CCLUP Riparian (1.3) and Biodiversity (1.1)

2000/01	2001/02	2002/03	2003/04	2004/05

3.15 Overlaps of Old Growth Management Areas, Wildlife Tree Patches and Forest Ecosystem Networks

Issue

TSR2 assumed a % overlap based on limited sampling to project overlaps. Improved accuracy is needed for TSR3.

Knowledge Gaps and Needs

Amount of overlap between Old Growth Management Areas (OGMA's), Wildlife Tree Patches (WTP's) and Forest Ecosystem Networks (FEN's) is unknown. Overlap inventory (GIS analysis) is needed.

Linkages and Dependencies

Dependent on OGMA classification, stream classification and RMA/WTP overlap.

Location

Region wide by TSA and BEC zones.

Schedule (delivery)

Completion by 2003.

Cost

Covered by CCLUP Biodiversity (1.1)

2000/01	2001/02	2002/03	2003/04	2004/05

3.16 Wildlife Tree Patch Attributes Retained in Mule Deer Winter Range

Issue

TSR2 assumed that Wildlife Tree Patch (WTP) attributes were achieved during selection of harvest process without specific management prescriptions. TSR3 requires verification of attribute achievement.

Knowledge Gaps and Needs

Gap: Define what WTP attributes are retained in MDWR's.
Need: Attribute definition and assessment through post harvest sampling.

Linkages and Dependencies

Dependent on definition of Old and Mature plus Old attributes in complete MDWR stands that have been harvested.

Location

Region wide but not TSA specific.

Schedule (delivery)

Completion by 2003.

Cost

Covered by CCLUP Mule Deer (1.2) and Biodiversity (1.1)

2000/01	2001/02	2002/03	2003/04	2004/05

3.17 Wildlife Tree Patch Contribution Old and Mature plus Old Contribution

Title needs better wording.

Issue

TSR2 used age as the single defining parameter for Old and Mature plus Old. WTP's meeting the Old and Mature plus Old age criteria were considered as contributing. There are other factors, such as patch size, needed to meet Old and Mature plus Old. TSR3 will require verification of WTP contribution to Old and Mature plus Old.

Knowledge Gaps and Needs

Gap: Contribution of WTP to Old and Mature plus Old.
Need: Assessment through sampling of post-harvest WTP's.

Linkages and Dependencies

Depends on definition of Old and Mature plus Old attributes in smaller patches.

Location

Region wide but not TSA specific.

Schedule (delivery)

Completion by 2003

Cost

Covered by CCLUP Mule deer (1.2) and Biodiversity (1.1).

2000/01	2001/02	2002/03	2003/04	2004/05

3.18 Uncertainty in the Management of Operational Adjustment Factors

Issue

TSR2 used values of 10-15% for OAF1 and 5% for OAF2. Local knowledge suggests that OAF1 may be less than 10%. Verification of OAF's is needed for TSR3.

Knowledge Gaps and Needs

- No localized information exists on OAF's.
- Random sampling of free-growing areas is required if recommendations for adjustments are to be made.

Linkages and Dependencies

Location

Region wide and TSA specific.

Schedule (delivery)

Completion by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$150,000	$150,000	$150,000		

3.19 Environmentally Sensitive Area Classification

Issue

TSR is currently using ESA classification that is 20 years old or more. As well, there is a general lack of confidence in the ESA soils mapping. Reconnaissance level Terrain Stability Mapping (TSM) exists over a large part of the Cariboo Region. *(needs linking)*

Knowledge Gaps and Needs

Gap: Unknown if a correlation exists between TSM and ESA mapping.
Need: Assessment of the correlation between ESA mapping and TSM in the Cariboo Region.

Linkages and Dependencies

Dependent on TSM mapping coverage.

Location

Region wide where TSM exists.

Schedule (delivery)

Completed by March 2001.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$100,000				

3.20 Unquantified Losses of Harvestable Volume

Issue

TSR assumes root rot losses are included in VDYP at endemic levels. Actual losses by TSA are unknown.

Knowledge Gaps and Needs

Gap: No approved method of determining volumes lost to root rots.
To be addressed are:
1. Lost productivity.
2. Unsalvaged merchantable losses.
3. Local losses.

Need: Review of predictive systems from other jurisdictions for adaptation to the Cariboo.

Linkages and Dependencies

Location

Region wide and TSA specific.

Schedule (delivery)

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$20,000				

3.21 Taper Equations

Issue

TSR uses VDYP to project future volumes of unmanaged stands. Taper functions are only localized to the Forest Inventory Zone (FIZ) level. There may be a need to localize further to the TSA or BEC level.

Knowledge Gaps and Needs

Need: Analysis of existing data to determine the need for localization.

Linkages and Dependencies

Location

Region wide by TSA or by BEC zone.

Schedule (delivery)

Completed by March 2001.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$20,000				

3.22 Growth and Yield

Issue

Growth and yield sample plots have been established periodically over the last 30 years in the Cariboo Forest Region. Maintenance will ensure that the establishment investment is not lost and will also reduce re-measurement costs.

Knowledge Gaps and Needs

Need: Maintenance of 75 permanent sample plots (PSP's) per year.

Linkages and Dependencies

Linked to calibration of VDYP.

Location

Region wide

Schedule (delivery)

Continuous annual activity.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$15,000	$15,000	$15,000	$15,000	$15,000

3.23 Impact of Douglas-fir Harvest Rules on Mule Deer Winter Ranges and Non-Mule Deer Winter Ranges

Issue

Mule Deer Winter Ranges (MDWR) and non-Mule Deer Winter Range fir stands are modeled in TSR. Significant volumes are retained within fir stands, which may be available for harvest in the future, if stand structure attributes are clarified.

Knowledge Gaps and Needs

Gap: Stand structure attributes require further study.

Need: 1. Review methodology from other jurisdictions.
2. Develop survey methodology for uneven-aged stands.

Linkages and Dependencies

Linked to stand structure mapping , terrestrial ecosystem mapping and Old and Mature plus Old attributes.

Location

Region wide in the 100 Mile House, Williams Lake and Chilcotin Forest Districts where drybelt Douglas-fir occurs.

Schedule (delivery)

Complete by March 2001.

Cost

None. To be done in-house by MOF Research and Resources Inventory Branches.

2000/01	2001/02	2002/03	2003/04	2004/05

3.24 Ingress on Old Roads and Right-of-Way Widths of Main Roads

Issue

TSR2 assumed no ingress on operational roads and related trails. Local knowledge suggests that a range of ingress levels occur. TSR2 uses nominal right-of-way widths based on current standards with no ingress.

Knowledge Gaps and Needs

Gaps:
1. The amount of ingress on operational roads and trails is unknown.
2. Main road R/W widths achieved and ingress are unknown.

Need: Survey or sample for TSR purposes by road category.

Linkages and dependencies

Dependent on inventory update for roads.

Location

Region wide and TSA specific.

Schedule (delivery)

Complete by March 2001.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$50,000				

3.25 Lack of Current Information in Forest Inventory

Issue

Forest cover inventories in the Cariboo Region range in age from 5years old (Quesnel TSA) to up to 30 years of age (parts of the Williams Lake Forest District),with different standards used.

Knowledge Gaps and Needs

Gap: Up-to-date forest cover inventories are required to address such items as problem forest type identification, species conversion and PA 16 deciduous management.

Need: 1. A plan to address the forest cover inventory needs of the Cariboo Region.
2. Forest cover inventories.

Linkages and Dependencies

Location

Region wide and especially needed in the 100 Mile House TSA and parts of the Williams Lake TSA that have not been re-inventoried since 1988.

Schedule (delivery)

Plan preparation by March 2001.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$1,200,000	$1,200,000	$1,200,000	$1,200,000	$1,200,000

3.26 Insufficient Data to Create Net Volume Adjustment Factors

Issue

Net Volume Adjustment Factors (NVAF) replace decay and waste adjustments in Growth and Yield, which adjusts the VDYP. The net effect is localization of adjustments.

Knowledge Gaps and Needs

NVAF sampling.

Linkages and Dependencies

Location

Region wide, including all TSA's, TFL's and IFPA's by BEC zones.

Schedule (delivery)

Completion by 2003 for TSA's.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$100,000	$100,000	$100,000		

3.27 Operability Netdowns

Issue
TSR2 used a combination of TRIM-based slope and local knowledge to define operability. Localization was sporadic.

Knowledge Gaps and Needs
Operability mapping based on terrain stability mapping (TSM) is required.

Linkages and Dependencies
Dependent on TSM.

Location
Region wide

Schedule (delivery)
Completion by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$175,000	$175,000	$175,000		

3.28 Growth and Yield

Issue

Growth and yield samples in natural stands have been established throughout the province since the early 1970's. A matrix was developed that provides for the full range of possible forest conditions (species, site index, stand density, BEC zone) for the development of models that will predict the growth of natural stands.

Knowledge Gaps and Needs

Gaps: There are many empty or only partially filled cells in the provincial matrix.
Need: Establishment of a minimum of 50 permanent sample plots per year including ecosystem classification on an annual basis to maintain progress towards filling the matrix.

Linkages and Dependencies

Location

Region wide

Schedule (delivery)

Continuous annual program until matrices requirements are met.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$100,000	$100,000	$100,000	$100,000	$100,000

3.29 Gavin Lake Growth and Yield Plots

Issue
Lack of information on growing rate

Knowledge Gaps and Needs
Install 10 G&Y plots in treated stands/second replicate

Linkages and Dependencies

Location
UBC Research Forest – Gavin Lake Block

Schedule (delivery)

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$10,000	$10,000	$10,000	$10,000	$10,000

3.30 Knife Creek Growth and Yield Plots

Issue

Lack of information on growing rate for uneven-aged stands

Knowledge Gaps and Needs

Install 40 G&Y permanent plots

Linkages and Dependencies

Location

UBC Research Forest Knife Creek Block

Schedule (delivery)

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$50,000	$50,000	$50,000	$50,000	$50,000

3.31 Inventory Adjustment

Issue

The accuracy of forest cover attributes in the forest cover data base (and subsequent per hectare volumes) was called into question as result of the recent inventory audits for all of the TSA's in the Cariboo Forest Region.

Knowledge Gaps and Needs

Gap: Insufficient data to adjust the polygon attributes to more accurately represent true attributes as expressed in the inventory audits.
Need. Phase VRI.

Linkages and Dependencies

Linked to NVAF and coarse woody debris activities.

Location

Williams Lake, Quesnel and 100 Mile House TSA's

Schedule (delivery)

Completed by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$240,000	$240,000	$240,000		

3.32 Amount of Coarse Woody Debris Retained and Recruited Inventory of CWD

Title is unclear.

Issue

TSR2 did not account for coarse woody debris (CWD) requirements. TSR3 will require data for modeling input on the retention and recruitment of CWD.

Knowledge Gaps and Needs

Gap: No current knowledge on CWD exists in the Cariboo Forest Region.
Need: Inventory for coarse woody debris for 100 Mile House and Quesnel TSA's. Analysis of data collected in phase 2 VRI project in Williams Lake TSA requires analysis for CWD.

Linkages and Dependencies

Data on CWD is normally collected as part of Phase 2 VRI.

Location

Region wide

Schedule (delivery)

Completed by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$165,000	$165,000	$165,000		

3.33 Lack of Current Information in Forest Inventory – Old Growth Site Index Adjustment

Issue

Current Old Growth Site Index (OGSI) adjustments are provincially based. Local data indicate that the Cariboo Region OGSI adjustment factor may vary significantly from the provincial factor.

Knowledge Gaps and Needs

Additional paired plot sampling to provide sufficient data for Cariboo Region adjustment factors.

Linkages and Dependencies

Dependent on sufficient sampling opportunity.

Location

Region wide

Schedule (delivery)

Completion by 2003.

Cost

2000/01	2001/02	2002/03	2003/04	2004/05
$175,000	$175,000	$175,000		

4.0 Regionally Significant Knowledge Gaps

4.1 Cariboo/Chilcotin Land Use Plan

All issues listed below are important across the Cariboo Forest Region to implement the Cariboo-Chilcotin Land Use Plan (CCLUP), a Cabinet approved Higher Level Plan under the Forest Practices Code. As decision makers are obligated to meet the targets, objectives and strategies of the CCLUP and demonstrate implementation through current practices, the Timber Supply Reviews required in 2003 for the 3 TSA's (one TSR3 for each) within the Cariboo Forest Region will also require the information necessary to resolve the issues below. Strategic Land Use Planning (SLUP) at the Sub-Regional Level to will guide operational planning and operations also require the listed information.

a) CCLUP biodiversity targets
b) CCLUP mule deer strategy/objectives/targets
c) CCLUP riparian targets
d) CCLUP visual targets
e) CCLUP fisheries/watershed targets/objectives/strategies
f) CCLUP caribou strategy/objectives/targets
g) CCLUP Wildlife
h) CCLUP grazing targets
i) CCLUP tourism/backcountry/recreation targets
j) CCLUP wildcraft targets
k) CCLUP target achievement monitoring
l) Integration of CCLUP targets in sub-regional planning

4.2 Timber Supply Review

Determination of operable land base for Timber supply analysis is impacted by Forest Practices Code, CCLUP and Sub-Regional Plans. A number of items of regional significance impact on the amount of Operable Land Base and as serve as constraining factors in Timber Supply analysis.

a) Wildlife Tree Patches.
b) Riparian Management Areas.
c) Mule Deer Winter Ranges
d) Visuals
e) Preservation of open range
f) Biodiversity

4.3 Growth and Yield

The growth rates of managed and unmanaged stands can have a significant impact on short, mid and long projected harvest levels. Current level of knowledge in the Cariboo region, indicates that there are significant gains that can be achieved with increased knowledge.

4.4 Resource Inventories

Determination of the Allowable annual cut for Timber Supply Areas(TSA), Tree Farm Licences (TFL) and other forms of area specific tenure (Innovative Forest practices Agreements) require confidence in the inventory of the forest Resources. Forest inventories in the Cariboo region range from 4 years to up to 33 years old. Inventories of other resources are incomplete and in some cases absent.

4.5 Aboriginal Issues

Traditional Use Studies (TUS) enable first nations to identify , catalogue and map their traditional land use activities and sites within their traditional territories. TUS's are a critical component of the provinces legal obligation to manage for aboriginal rights and title, when conducting land and resource management activities.

5.0 TSA specific Knowledge Gaps and Needs Summary Table

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REGION	Primary Strategic Decision Process		Knowledge Needs and Gaps			Project Status	Secondary Strategic Decision Process	Yes?	Specific Project (or Activity) Cost/Benefit		
Administrative Area	Status	Due Date	Issue	Gap	Need	New or Existing?	TSR, SLUP, other strategic objective	Y=1 N=0	Location	Constraint or Goal	Cost Estimate $ for 2000/01
All Cariboo Region TSAs	CCLUP	2005	CCLUP Biodiversity Targets	Location and Quality of Old Growth	Identify/define old attributes, Inventory OGMAs, digitize data and re-	New	TSR, SLUP	1	Region Wide		200,000
All Cariboo Region TSAs	CCLUP	Dec 2003	CCLUP Mule Deer Strategy/Objective/Targets	Attribute mapping to complete MDWR plans	Biophysical Mapping	New	TSR, SLUP	1	Region Wide		100,000
All Cariboo Region TSAs	CCLUP	2005	CCLUP Riparian Targets	Lack of Completed Stream, Wetlands, Lakes Classification for reserve width and accurate forest cover within	Inventory /Classification of remaining Stream, wetlands and Lakes	New	TSR, SLUP	1	Region Wide		200,000
All Cariboo Region TSAs	TSR	2005	Lake Classification /Protection,/Management	Baseline information For Lakes Classification committees, CCLUP, and Recreation Management	Winter oxygen testing of 200+ lakes, 1:20000 lake inventories of 50 Lakes/yr, assessments to determine angler use	New	SLUP	1	Region Wide		260,000
All Cariboo Region TSAs	TSR	2005	Reconnaisance (1:20,000) Fish and Fish Habitat Inventory	< 20% of Region is inventoried	Fish and Fish Habitat inventories.	New	SLUP	1	Region Wide		2,000,000
All Cariboo Region TSAs	TSR	2005	Intensive (species specific) Fish and Fish Habitat Inventory	Knowldege of priority fish species	Species specific Inventories.	New	SLUP	1	Region Wide		100,000
All Cariboo Region TSAs	CCLUP	2005	CCLUP Visual Targets	Refinement of Visuals Cariboo Region TSAs constrained areas	Map, Digitize and re-analyse impacts	New	TSR, SLUP	1	Region Wide		50,000
All Cariboo Region TSAs	CCLUP	2005	CCLUP Fisheries /Watershed Targets/Objectives/Strategies	Info gaps on risk to fisheries, hydrologic recovery after harvesting	Complete Risk assessment reports and monitor hydrologic recovery in harvested watersheds	New	TSR, SLUP	1	Region Wide		85,000
All Cariboo Region TSAs	CCLUP	2005	CCLUP Caribou Strategy/Objective/Targets	Info gaps on habitat suitability and silvicultural effectiveness of prescriptions	Complete TEM mappingand operational trials monitor regeneration	new	TSR, SLUP	1	Region Wide		250,000

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		Cost/ Benefit Rating						Feasibility Rating						
chedule ear to be mpleted)	Impact or Benefit	5=high 1=low	Current Project Status	Project Dependencies	Timelines (when is deliverable required)	End Users	Feasible?	3=high 2=med 1=low	Cost/ Benefit plus Feasibility	PROJECT RANKING	Regional Issue Ranking	State Issue (from PART A)	other SO 's, balance	Partners'?, employment Person days/yr
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	new	Forest Cover Update	2005	MoF, MELP Industry	Yes	3	8	1	1	CCLUP Implement'n		400
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	new		2005	MoF, MELP Industry	Yes	3	8	2	1	CCLUP Implement'n		200
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	new	TRIM2	2005	MoF, MELP Industry	Yes	3	8	3	1	CCLUP Implement'n		400
2005	Provides baseline inforantion for CCLUP, SLUP and TSR	5	New		2000	MoF MELP Industry	yes	3	8	3	1,2	CCLUP Implemention and Operable Land Base definition		
2005	Provides baseline inforantion for CCLUP, SLUP and TSR	5	New		2000	MoF MELP Industry	yes	3	8	3	1,2	CCLUP Implemention and Operable Land Base definition		
2005	Provides baseline inforantion for CCLUP, SLUP and TSR	5	New		2000	MoF MELP Industry	yes	3	8	3	1,2	CCLUP Implemention and Operable Land Base definition		
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	new	TRIM2	2005	MoF, MELP Industry	Yes	3	8	4	1	CCLUP Implement'n		100
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	New		2005	MoF, MELP Industry	Yes	3	8	5	1	CCLUP Implement'n		170
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	New		2005	MoF, MELP Industry	yes	3	8	6	1	CCLUP Implement'n		500

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REGION	Primary Strategic Decision Process		Knowledge Needs and Gaps			Project Status	Secondary Strategic Decision Process	Yes?	Specific Project (or Activity) Cost/Benefit		
Administrative Area	Status	Due Date	Issue	Gap	Need	New or Existing?	TSR, SLUP, other strategic objective	Y=1 N=0	Location	Constraint or Goal	Cost Estimate $ for 2000/01
All Cariboo Region TSAs	CCLUP	2005	CCLUP furbearer targets and Identified Wildlife	Habitat needs and extent of furbearers species, extent and habitat needs of identified wildlife includes other Identified Wildlife Management Species and CCLUP Species	Inventory of habitat and exten	New	TSR, SLUP	1	Region Wide		100,000
All Cariboo Region TSAs	CCLUP	2005	Mule Deer population inventory objectives/requirements	Animal Inventory and Migration and mortality studies	Aerial and Ground Inventory , radio telemetry and sightability trials	New	TSR, SLUP	1	Region Wide		250,000
All Cariboo Region TSAs	CCLUP	2005	Grizzly Bear Population and Habitat Inventory Requirements	Knowledge of current population size and relative abundance and determine areas of critical Grizzly Bear habitat	Inventories of grizzly bear populations, Mapping and classifying Grizzly Bear habitat	New	TSR, SLUP	1	Region Wide		300,000
All Cariboo Region TSAs	CCLUP	2005	Bighorn Sheep and Mountain Goat Inventory objectives/Requirements	Population and habitat requirements	Animal Inventory Habitat Inventory Population Monitoring	New	TSR, SLUP	1	Region Wide		110,000
All Cariboo Region TSAs	CCLUP	2005	CCLUP Moose Strategy/Objectives/Targets	Identification of key wetlands throughout the Region	Mapping and classification of wetelands, Radio telemetry	New	TSR, SLUP	1	Region Wide		350,000
All Cariboo Region TSAs	CCLUP	2005	Species and Habitats at Risk Inventory	Inventory to identify species and habitats at risk	Inventories of wildlife species at risk , detailed site assessments to determine WHA requirements, , inventories to identify forest encroachment of grasslands	New	TSR, SLUP	1	Region Wide		200,000
All Cariboo Region TSAs	CCLUP	2005	Integration of CCLUP Targets in Sub-Regional Planning	Analysis of CCLUP targets for sub-regional Planning	GIS Analysis	New	TSR, SLUP	1	Region Wide		150,000

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chedule ear to be mpleted)	Impact or Benefit	5=high 1=low	Current Project Status	Project Dependencies	Timelines (when is deliverable required)	End Users	Feasible?	3=high 2=med 1=low	Cost/ Benefit plus Feasibility	PROJECT RANKING	Regional Issue Ranking	State Issue (from PART A)	other SO 's, balance	Partners?, employmen t Person days/yr
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	new		2005	MoF, MELP Industry	Yes	3	8	7a	1	CCLUP Implement'n		200
	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	New		2001	MoF, MELP Industry	Yes	3	8	7b	1	CCLUP Implement'n		
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	New		2005	MoF, MELP Industry	Yes	3	8	7c	1	CCLUP Implement'n		
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	New		2005	MoF, MELP Industry	Yes	3	8	7d	1	CCLUP Implement'n		
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	New		2005	MoF, MELP Industry	Yes	3	8	7e	1	CCLUP Implement'n		
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	New		2005	MoF, MELP Industry	Yes	3	8	7e	1	CCLUP Implement'n		
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	New		2005	MoF, MELP Industry	Yes	3	8	8	1	CCLUP Implement'n		

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REGION	Primary Strategic Decision Process		Knowledge Needs and Gaps			Project Status	Secondary Strategic Decision Process	Yes?	Specific Project (or Activity) Cost/Benefit		
Administrative Area	Status	Due Date	Issue	Gap	Need	New or Existing?	TSR, SLUP, other strategic objective	Y=1 N=0	Location	Constraint or Goal	Cost Estimate $ for 2000/01
All Cariboo Region TSAs	CCLUP	2005	Water Quality and Quantity Information	All	Collection of Information required to make decisions around harvesting impacts on Water Quality and Quantity	Existing	SLUP	1	Region Wide		105,000
All Cariboo Region TSAs	CCLUP	2005	CCLUP Grazing Targets	Maintenance of AUMS and impacts of grazing targets on other resources and grassland (open range) timber encroachment	Range Reference monitoring+ Inventory of Grasslands	New	TSR, SLUP	1	Region Wide	Periodic Remeasurements	85,000
All Cariboo Region TSAs	CCLUP	2005	CCLUP Tourism, backcountry, recreation targets	info on current Tourism, backcountry, recreation and future opportunities	Tourism/ recreation opportunity studies in each Forest District on current and future uses	New	SLUP	1	Region Wide		150,000
All Cariboo Region TSAs	CCLUP	2005	CCLUP Wildcraft Targets	Wildcraft extent	Inventory pine mushroom sites/Effects of Timber harvesting	New	SLUP	1	Region Wide		10,000
All Cariboo Region TSAs	CCLUP	2005	CCLUP Target Achievement	Info gaps on effectiveness of implementing resource prescriptions described in CCLUP integration Report	Collection of info, GIS analysis and reporting to public/ IAMC and RRB on results	New	TSR, SLUP	1	Region Wide		50,000
All Cariboo Region TSAs	SLUP	March 31, 2001	TUS	Knowlege of aboriginal traditional Use	TUS	Existing yr 2 of 3	TSR, SLUP	1	TNG Territorial Claim	Completion of project	500,000

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hedule ar to be npleted)	Impact or Benefit	5=high 1=low	Current Project Status	Project Dependencies	Timelines (when is deliverable required)	End Users	Feasible?	3=high 2=med 1=low	Cost/ Benefit plus Feasibility	PROJECT RANKING	Regional Issue Ranking	State Issue (from PART A)	other SO's, balance	Partners?, employmen t Person days/yr
2003	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	4	ongoing		ongoing	MoF, MELP, Industry, Water Surveys of Canada	Yes	3	7	9	1	CCLUP Implement'n		
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	4	new		2005	MoF, MELP Industry	Yes	3	7	10	1	CCLUP Implement'n		170
2003	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	4	new		2003	MoF, MELP Industry	Yes	3	7	11	1	CCLUP Implement'n		300
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	new		2005	MoF, MELP Industry	Yes	3	8	12	1	CCLUP Implement'n		20
2005	Meet CCLUP HLP legal obligations+ TSR3 analysis requirements	5	new		2005	MoF, MELP Industry	Yes	3	8	13	1	CCLUP Implement'n		100
rch 2001	Province better able to meet legal obligations	5	Existing		March 2001	MoF, FN, Industry	Yes	3	8	1	5	TUS		1000

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REGION	Primary Strategic Decision Process		Knowledge Needs and Gaps			Project Status	Secondary Strategic Decision Process	Yes?	Specific Project (or Activity) Cost/Benefit			
Administrative Area	Status	Due Date	Issue	Gap	Need	New or Existing?	TSR, SLUP, other strategic objective	Y=1 N=0	Location	Constraint or Goal	Cost Estimate $ for 2000/01	S (y co
Williams Lake TSA	SLUP	March 31, 2001	TUS	Knowlege of aboriginal traditional Use	TUS	New	TSR, SLUP	1	Ulkatcho FN		150,000	M

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dule to be eted)	Impact or Benefit	5=high 1=low	Current Project Status	Project Dependencies	Timelines (when is deliverable required)	End Users	Feasible?	3=high 2=med 1=low	Cost/ Benefit plus Feasibility	PROJECT RANKING	Regional Issue Ranking	State Issue (from PART A)	other SO 's, balance	Partners?, employmen t Person days/yr
2001	Province better able to meet legal obligations	5	New		March 2001	MoF, FN, Industry	Yes	3	8	2	5	TUS		300

REGION	Primary Strategic Decision Process		Knowledge Needs and Gaps			Project Status	Secondary Strategic Decision Process	Yes?	Specific Project (or Activity) Cost/Benefit		
Administrative Area	Status	Due Date	Issue	Gap	Need	New or Existing?	TSR, SLUP, other strategic objective	Y=1 N=0	Location	Constraint or Goal	Cost Estimate $ for 2000/01
Quesnel TSA & Williams Lake TSA	SLUP	March 31, 2001	TUS	Knowlege of aboriginal traditional Use	TUS	New	TSR, SLUP	1	Lhtako FN		150,000
Quesnel TSA	SLUP	March 31, 2001	TUS	Knowlege of aboriginal traditional Use	TUS	New	TSR, SLUP	1	Nazko Band		150,000
100 Mile House TSA	SLUP	March 31, 2001	TUS	Knowlege of aboriginal traditional Use	TUS	New	TSR, SLUP	1	Whispering Pines Band		150,000
All Cariboo Region TSAs	SLUP	March 31, 2001	Accuracy of Archeaological Inventory Overviews	Archaeological Inventory Surveys	Field sampling	New	TSR SLUP	1	Various Throughout Cariboo Region		500,000
All Cariboo Region TSAs	TSR	Dec 2003	TRIM 2	Completion by 2003		Existing	CCLUP Riparian & VisualTargets	1	Region wide	for TSR3	500,000
All Cariboo Region TSAs	TSR	Dec 2003	Impact of Streams on operable land base	Stream classification	Inventory, mapping	New	CCLUP Riparian	1	Region wide	for TSR3	0
All Cariboo Region TSAs	TSR	Dec 2003	Riparian Impacts on operable land base	RMA (RRZ/RMZ) Classification	Classification and mapping	New	CCLUP Riparian	1	Region wide	for TSR3	0
All Cariboo Region TSAs	TSR	Dec 2003	Unquantified losses of harvestable volume	loss of harvestable volumes and unsalvaged losses	Strategic Inventory and mapping of MPB, spruce Budworm, Hemlock looper	Existing		1	Region wide	for TSR3	170,000
All Cariboo Region TSAs	TSR	Mar 1999	Managing for timber and non-timber values in MPB susceptible suystems	Assessment and management systems to provide stabletimber flowsaand reatin suitable mature and old forest retention where MPB is present	Workshjop ofexpersts to explore alternative approaches	New	SLUP, CCLUP	1	Region Wide		30,000
All Cariboo Region TSAs	TSR	Dec 2003	amount of area to remove from THLB for roads	update FC1 feature codes, FCI forest cover update, Ownership Updat	Inventory Update (50 % of Region each year)	New	CCLUP Biodiversity	1	Region wide	for TSR3	300,000
Quesnel TSA	TSR	Oct 2000	G&Y	Yield Curve accuracy	Remeasurement of PSPs	new		0	Quesnel TSA	136	195,000
All Cariboo Region TSAs	TSR	Dec 2003	Lack of current information in Forest Inventory	Site Index harvested stands	SIBEC	New	CCLUP bidiversity	1	Region wide	for TSR3	500,000
All Cariboo Region TSAs	TSR	Dec 2003	Impact of fir harvest rules in MDWRs and non MDWRs	stand structure	Stand structure mapping & TEM	New	CCLUP MWDR	1	Region wide	for TSR3	0
All Cariboo Region TSAs	TSR	Dec 2003	Impact of fir harvest rules in MDWRs and non MDWRs	stand structure	Ba calculations	New	CCLUP MWDR	1	Region wide	for TSR3	0
All Cariboo Region TSAs	TSR	Dec 2003	Impact of fir harvest rules in MDWRs and non MDWRs	stand structure	OLD and Mature plus OLD attribute research, inventory and mapping	New	CCLUP MWDR	1	Region wide	for TSR3	0

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hedule ar to be pleted)	Impact or Benefit	5=high 1=low	Current Project Status	Project Dependencies	Timelines (when is deliverable required)	End Users	Feasible?	3=high 2=med 1=low	Cost/ Benefit plus Feasibility	PROJECT RANKING	Regional Issue Ranking	State Issue (from PART A)	other SO 's, balance	Partners?, employment Person days/yr
ch 2001	Province better able to meet legal obligations	5	New		March 2001	MoF, FN, Industry	Yes	3	8	3	5	TUS		300
ch 2001	Province better able to meet legal obligations	5	New		March 2001	MoF, FN, Industry	Yes	3	8	4	5	TUS		300
ch 2001	Province better able to meet legal obligations	5	New		March 2001	MoF, FN, Industry	Yes	3	8	5	5	TUS		300
ch 2001	Improve AOS predictive model	3	New		March 2001	MoF, FN, Industry	Yes	3	6	6	5	Arch Inventories		1000
c 2003	clear definition of THLB	5	Ongoing		Oct 2003	MoF MELP Industry	yes	3	8	1	1	CCLUP Implement'n		1000
c 2003	clear definition of THLB	5	New	TRIM 2 completion	Dec 2003	MoF MELP Industry	yes	3	8	2	1	CCLUP Implement'n		0
c 2003	clear definition of THLB	5	New	TRIM 2 completion & update	Dec 2003	MoF MELP Industry	yes	3	8	3	2	Operable Land Base		0
c 2003	minimize losses of harvestable volume	5	Ongoing		Dec 2003	MoF MELP Industry	yes	3	8	4	3	Growth and Yield	SH	340
2000	Sustainable timber and habitat management in MPB attacked areas	5	New		2000	MoF MELP Industry	yes	3	8	5	2	Operable Land Base		
ec 2003	clear definition of THLB	5	New		Dec-03	MoF MELP Industry	yes	3	8	6	2	Operable Land Base	SH	600
ct 2001	Confirm Yield tables	5	New		Oct 2001	MoF/Ind	yes	3	8	7	3	Growth and Yield		390
ec 2003	increase of total harvestable volume	4	New		Dec 2003	MoF MELP Industry	yes	3	7	8	3	Growth and Yield	SH	1000
ec 2003	to meet CCLUP requirements	5	New		Dec 2003	MoF MELP Industry	yes	2	7	9	2	Operable Land Base	SH	0
ec 2003	to meet CCLUP requirements	2	New		Dec 2003	MoF MELP Industry	yes	2	4	10	2	Operable Land Base	SH	0
ec 2003	to meet CCLUP requirements	4	New		Dec 2003	MoF MELP Industry	yes	2	6	11	2	Operable Land Base	SH	0

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REGION	Primary Strategic Decision Process		Knowledge Needs and Gaps			Project Status	Secondary Strategic Decision Process	Yes?	Specific Project (or Activity) Cost/Benefit		
Administrative Area	Status	Due Date	Issue	Gap	Need	New or Existing?	TSR, SLUP, other strategic objective	Y=1 N=0	Location	Constraint or Goal	Cost Estimate $ for 2000/01
All Cariboo Region TSAs	TSR	Dec 2003	Projection of future volumes of regenerated stands	Better tracking growth of regenerated stands	G & Y monitoring - SIBEC link	New		1	Region wide	for TSR3	10,000
WI Lk & 100 Mile	TSR	Dec 2003	Ability to predict harvestable volumes from selection harvest areas	Prognosis calibration for TSR III	data collection and analysis	Existing	CCLUP	1	Region Wide	for TSR3	50,000
All Cariboo Region TSAs	TSR	Dec 2003	Riparian Impacts on operable land base	RMA / WTP	overlap Inventory	New	CCLUP Biodiversity and Riparian	1	Region wide by TSA by BEC	for TSR3	0
All Cariboo Region TSAs	TSR	Dec 2003	OGMA	OGMA / WTP / FEN	overlap Inventory	New	CCLUP Biodiversity and Riparian	1	Region wide by TSA by BEC	for TSR3	0
All Cariboo Region TSAs	TSR	Dec 2003	WTP attributes	attributes retained in MDWRs	definition / assessment	New	CCLUP MWDR	0	Region wide	for TSR3	0
All Cariboo Region TSAs	TSR	Dec 2003	WTP attributes	contribution to OLD and M+ old	assessment	New	CCLUP MWDR	0	Region wide	for TSR3	0
All Cariboo Region TSAs	TSR	Dec 2003	Uncertainty re the magnitude of OAFs	assessment of process to determine and localize OAFs 1 & 2	random sampling of FG areas	New		1	Region wide - TSA specific	for TSR3	150,000
All Cariboo Region TSAs	TSR	Dec 2003	currently using ESA (20 Yr + old) classification, potential Cariboo Region TSAs needs updating	lack of confidence in quality of ESA soils mapping	Assessment of ESA classification vs TSM	Existing		0	Region wide		50,000
All Cariboo Region TSAs	TSR	March 2001	Unquantified losses of harvestable volume	loss of harvestable volumes	Inventory of root rots	study of predictive systems		0	Region wide TSA specific		20,000
All Cariboo Region TSAs	TSR	Dec 2003	uncertainty of use of Provincial Cariboo Region TSAs determined Interior Taper equations	validation of need to localize	Analyze existing data for localization	New		0	Region wide by TSA or By BEC	for TSR3	20,000
All Cariboo Region TSAs	TSR	Annual in perpetuity	G&Y	Yield Curve accuracy	Maintenance of PSPs	New		0	Region Wide	75 PSPs	15,000
All Cariboo Region TSAs	TSR	Dec 2003	Impact of fir harvest rules in MDWRs and non MDWRs	stand structure	Develop survey methodology for uneven-aged stands	New	CCLUP MWDR	0	100 Mile House, Williams Lake and Chilcotin Forest Districts wherever Dry Belt fir occurs	for TSR 3	In-house development by MOF Resources Inventory and Research Branches

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c 2003	increase of total harvestable volume	4	New		Dec 2003	MoF Industry	yes	3	7	12	3	Growth and Yield	SH	20
c 2003	TSR 3 approved calibration of models	4	Ongoing		Dec 2003	MoF MELP Industry	yes	3		13	3	Growth and Yield	SH	100
c 2003	clear definition of THLB	5	New	TRIM 2 completion & update	Dec 2003	MoF MELP Industry	yes	3	8	14	1,2	CCLUP Implement'n, Operable Land Base		0
c 2003	clear definition of THLB	5	New	Inv. Update OGMA classification SRP	Dec 2003	MoF MELP Industry	yes	3	8	15	1	CCLUP Implement'n		0
c 2003	to meet CCLUP	4	New	Attribute defn	Dec 2003	MoF MELP Industry	yes	3	7	16	2	Operable Land Base		0
c 2003	to meet CCLUP	4	New	Attribute defn	Dec 2003	MoF MELP Industry	yes	3	7	17	2	Operable Land Base		0
c 2003	certainty of OAFs used , increase of harvestable volumes, up to 3 %	4	New		Dec 2003	MoF Industry	yes	3	7	18	3	Growth and Yield	SH	300
ch 2001	clear definition of THLB	4	New		March 2001	MoF MELP Industry	yes	3	7	19	4	Inventory Age and Accuracy		100
ch 2001	minimize losses of harvestable volume	5	New		March 2001	MoF MELP Industry	yes	3	8	20	3	Growth and Yield		40
ch 2001	certainty of Gross vol estimates	1	New		March 2001	MoF Industry	yes	3	4	21	3	Growth and Yield		40
ch 2001	Protection of investment	4	new		March 2001	MoF/Industry	yes	3	7	22	3	Growth and Yield		30
c 2003	to meet CCLUP requirements	3	New	dependant on development of sampling methodology	Dec 2003	MoF MELP Industry	yes	1	4	23	2	Operable Land Base	SH	0

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REGION	Primary Strategic Decision Process		Knowledge Needs and Gaps			Project Status	Secondary Strategic Decision Process	Yes?	Specific Project (or Activity) Cost/Benefit			
Administrative Area	Status	Due Date	Issue	Gap	Need	New or Existing?	TSR, SLUP, other strategic objective	Y=1 N=0	Location	Constraint or Goal	Cost Estimate $ for 2000/01	S (y co
All Cariboo Region TSAs	TSR	Dec 2003	confirm amount of ingress on old roads and R/W width of Main roads	Ingress amount unknown	surveys	New		0	Region wide	for TSR 3	50,000	Ma
All Cariboo Region TSAs	TSR	Dec 2003	Lack of current information in Forest Inventory	PFT identification, Species Cconversion, PA16 (Deciduous area), Old growth (age classes 7,8, 9)	Sampling and reclassification	New		1	Region wide	for TSR 3	1,200,000	D
All Cariboo Region TSAs	TSR	Dec 2003	Lack of data to create Net Volume Adjustment Factor (NVAF)	no NVAFs	Pilot studies to assess need for NVAFs	New		1	Region wide	for TSR 3	100,000	D
All Cariboo Region TSAs	TSR	Dec 2003	Operability netdowns	Operability mapping	TSM mapping	Existing		1	Region wide	for TSR 3	175,000	D
All Cariboo Region TSAs	TSR	Annual Until Matrix is completed	G&Y	Yield Curve accuracy	Establishment of PSPs including eco-classification	New		1	All Cariboo Region TSAs TSA's	50 PSPs	100,000	Ma
Williams Lk	TSR	Mar 1999	G&Y/Enhanced Silviculture Treatments in ICH	Lack of information on growing rate	Install 10 G&Y plots in treated stands/second replicate	Existing			Gavin Lake		10,000	
Williams Lk	TSR	Mar 1999	G&Y/Fdi stands in IDF	Lack of information on growing rate for uneven-aged stands	Install 40 G&Y permanent plots	Existing			Knife Creek		50,000	
All Cariboo Region TSAs	TSR	Dec 2003	Inventory Adjustment	Vegetation Inventory	VRI Phase 2 Sampling	New	SLUP	1	All TSA's	300 Phase 2 samples By 2003	240,000	D
100 Mile House and Quesnel TSA's	TSR	Dec 2003	amount of Coarse Woody Debris retained & recruited	impact of recruitment on recoverable volumes where no CWD exists	Inventory of CWD (VRI)	New		1	100 Mile House and Quesnel TSA's	for TSR 3	165,000	D
All Cariboo Region TSAs	TSR	Dec 2003	Lack of current information in Forest Inventory	OGSI	Localization of OGSI for species	New		1	Region wide	for TSR 3	175,000	D

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		Cost/ Benefit Rating						Feasibility Rating						
ule o be eted)	Impact or Benefit	5=high 1=low	Current Project Status	Project Dependencies	Timelines (when is deliverable required)	End Users	Feasible?	3=high 2=med 1=low	Cost/ Benefit plus Feasibility	PROJECT RANKING	Regional Issue Ranking	State Issue (from PART A)	other SO's, balance	Partners?, employment Person days/yr
2001	possible addition of up to 3% of THLB	3	New	Update FC1	March 2001	MoF MELP Industry	yes	3	6	24	4	Inventory Age and Accuracy	SH	100
003	increase of total harvestable volume	3	New		Dec 2003	MoF MELP Industry	yes	1	4	25	4	Inventory Age and Accuracy	SH	2400
003	certainty of Net vol estimates	1	New		Dec 2003	MoF Industry	yes	3	4	26	3	Growth and Yield		200
003	clear definition of THLB	3	New		Dec 2003	MoF MELP Industry	yes	3	6	27	2	Operable Land Base		350
2001	Improve Yield tables	4	new		March 2001	MoF/Industry	Yes	3	7	28	3	Growth and Yield	SH	200
										29				
										30				
003	improve volume estimates	3	new		Dec 2003	MoF/Industry	Yes	3	6	31	4	Inventory Age and Accuracy		480
003	clarification of harvestable volume /ha	2	New		Dec 2003	MoF Industry	yes	3	5	32	2	Operable Land Base		330
003	increase of total harvestable volume	2	New	# of acceptable areas	Dec 2003	MoF MELP Industry	no	1	3	33	3	Growth and Yield		350

APPENDIX G: ENHANCING ENVIRONMENTAL VALUES

INTERIM

RESOURCE MANAGEMENT PLAN

2000/2001

ENHANCING ENVIRONMENTAL VALUES

Cariboo Forest Region

September 30, 1999

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"Strategy at a Glance"

General Strategy	The *Enhancing Environmental Values* (EEV) report is a compendium of technical considerations and gap analyses to guide proponents on regional project opportunities for restoring key watersheds (buckets) damaged or seriously threatened by past forest development activities.
Overview	This report presents a list of 133 key buckets with the rationale for their selection, information on transitional buckets and estimated costs to remedy. Key buckets were identified by the presence of target fish species and domestic water supply.
Watershed Restoration Program	As the foundation program for the EEV, the Watershed Restoration Program is designed to speed the recovery of fisheries and aquatic resources in key watersheds across the province which have been damaged or seriously threatened by past forest development activities.
Process	The process used to prepare the EEV report was: 1. Identification of key buckets from a regional list and GIS-based map of high priority watersheds developed by MELP. Watershed sub-basins called 'buckets' (developed for the Cariboo Forest Region) were ranked according to criteria by MELP (high fish value and domestic water supply), DFO and MOF. 2. Reviewing and ranking of the list of buckets to include forestry-related current issues that continue to impact fisheries and domestic water supply values within buckets. 3. Aggregation of ranking from each process incorporated into a multi-agency ranking for each of the key buckets. 4. Consultation with licensee stakeholders.

1.0 Introduction

The Enhancing Environmental Values (EEV) document is based solely on technical considerations and gap analyses. This plan is intended to guide proponents on regional project opportunities to ensure that maximum resource benefits are derived from Forest Renewal BC (FRBC) investments. It is also presented for identifying to FRBC and any potential proponents and/or partners the existing opportunities for investment on the landbase. The EEV plan does not address job creation, partnerships (present or potential), worker training or community stability. Instead, it is a technical evaluation designed to set "goalposts" within which projects meeting FRBC social objectives may be selected. This plan will remain a working document that is flexible to accommodate change as new priorities and issues arise over time.

2.0 Terminology

Bucket is used for the purposes of this Resource Management Plan instead of *watershed* to describe a hydrological land area unit. The buckets, delineating a hydrological land unit, were developed by R. Page in Victoria for CCLUP using 1:50,000 NTS maps, and they generally conform to a drainage system of a creek or creeks. In some cases, a bucket may represent a residual area in a major basin or sub-basin that does not contribute to surface runoff (subsurface condition is unknown) to a stream or a river. The buckets are identified by bucket numbers rather than names, and range from 135 to 84,300 ha in size with an average area of about 20,000 ha. These are relatively smaller land area units than the 3rd to 5th order stream drainage basins.

Point of Diversion refers to a licensed location of domestic water intake from a source.

3.0 Cariboo Forest Region

The area of the Cariboo Forest Region is approximately 8.2 million hectares, or just under one-tenth of the entire provincial land base. The central area of the region is situated on the Interior Plateau and bisected by the Fraser River. The Quesnel Highland rises to meet the Cariboo Mountains at the eastern extent of the region. Both the Camelsfoot and Marble Ranges extend into the southwest part of the region. The climate varies from fairly dry conditions west of the Fraser River to considerably wetter conditions to the east of the Fraser River.

Most of the economic activity in the Cariboo can be found in three communities: Quesnel, Williams Lake and 100 Mile House. Three of the five forest districts are based in these communities, with the Chilcotin district office in Alexis Creek and the Horsefly district based in Horsefly; these districts are located to the west and east, respectively, of Williams Lake.

The recent focus of watershed restoration in the Cariboo has addressed impacts relating to past forestry practices. However, both mining and agriculture also play an important role in determining the success of watershed restoration. Extensive placer mining in the eastern portions of the region has preceded much of the forest development, and the potential for successful watershed restoration is marginally dependent on past, present and future mining activity in the Cariboo Mountains and Quesnel Highland. Agricultural land development is prevalent throughout most of the region, although this activity is primarily located on private lands and overlaps with forestry impacts. In areas where agriculture is practiced extensively, most of the associated watershed impacts result from uncontrolled streamside grazing and elevated nutrient concentrations in surface-water runoff.

The Cariboo Chilcotin Land Use Plan (CCLUP) has identified the Horsefly River watershed as the number one priority for watershed assessment and restoration. The Cottonwood/Swift, Bonaparte and Cariboo Rivers are also high priority watersheds. In addition to the CCLUP rankings, the Bridge Creek watershed is also ranked as a high priority. As a result of the higher level plan guidance, project proposals that meet both FRBC requirements and support the CCLUP objectives within these five watersheds will receive highest priority for funding.

3.1 Watershed Restoration Program

The Watershed Restoration Program (WRP) focuses on restoring and protecting fisheries and aquatic resources in key watersheds across the province. The WRP vision and goals are stated below.

3.1.1 Vision

The Watershed Restoration Program is designed to speed the recovery of fisheries and aquatic resources in key watersheds across the province which have been damaged or seriously threatened by past forest development activities.

3.1.2 Goals

The goals of the Watershed Restoration Program for the years 2000 to 2005 are:

- Restore and protect fish habitat and water quality in high priority watersheds adversely affected by past forest harvesting practices that, without intervention, would require decades to recover naturally.
- Provide better knowledge, information and tools to strengthen sustainable management of watersheds.
- Provide community-based employment, training and stewardship opportunities.

Over the past several years, prioritization of activities and geographic areas for the WRP has taken place. These have been joint processes between the Ministry of Environment, Lands and Parks (MELP), Ministry of Forests (MOF) and industry, designed to solicit proposals and facilitate investment planning. Criteria utilized to set priorities included, but were not limited to:

- Fisheries management value
- Unique or regionally significant fish species
- Significant commercial/recreational fish populations
- First Nations fisheries values
- Threatened or endangered fish species/stocks
- Human-caused land use changes
- Climate and geology
- Recreational use

- Historical enhancement effort
- Points of diversion
- Potential for successful restoration, protection and maintenance
- Community watersheds
- Flood hazard
- Cariboo-Chilcotin Land Use Plan (CCLUP) management objectives

Similarly, in this process, the same criteria have been used to rank watersheds for the purposes of directing watershed restoration investments as well as additional criteria of past investments. For this purpose, only some were selected as criteria, as explained further on in this RMP.

A technical committee was formed of MOF representatives from the districts and region with regional representatives from MELP, the federal Department of Fisheries and Oceans (DFO) and FRBC. The technical committee gathered and reviewed information on fish species, domestic water supply and level of impact in buckets throughout the region and prepared a list of key buckets for the region.

This report presents the list of key buckets, along with the explanation and rationale for the selection, information on transitional status of the key buckets, and estimated costs to remedy. The following sections describe the sequential completion of the EEV component of the Resource Management Plan.

3.2 Process for Regional Identification and Ranking of Key Buckets

Guidelines were provided as a benchmark to achieve objectives for developing the Enhancing Environmental Values strategic objective for the 2000/2001 Resource Management Plan. The process to develop key products to achieve these objectives is as follows:

1. **Identify Key Buckets**
   A regional list (and GIS-based map) of high priority watersheds was developed by MELP using watershed sub-basins called 'buckets' (developed for the Cariboo Forest Region). These buckets were ranked according to MELP's high fish value criteria and domestic water supply. In conjunction with this process, the Department of Fisheries and Oceans (DFO) ranked its high priority buckets to form a key bucket list.
2. **Review and Rank the Bucket List**
   This list was reviewed by Ministry of Forest (MOF) district staff and ranked, and included district priorities. Ranking included forestry-related current issues within district buckets that continue to impact fisheries and domestic water supply values.
3. **Aggregate Ranking**
   Ranking information collected from each process was then incorporated into a multi-agency ranking for each of the key buckets.
4. **Consultation**
   The multi-agency ranking list was then discussed with licensee stakeholders from the three TSA's within the Cariboo Forest Region – Williams Lake, Quesnel and 100 Mile House.

From this consultation, 20% of the key buckets were selected as satisfying FRBC 2000/2001 funding objectives.

4.0 Key Bucket Ranking Criteria

4.1 Target Fish Species

Concerns have been raised in the Cariboo Forest Region for a number of fish species and stocks. After a review of the database and from local knowledge, MELP and DFO have identified the target fish species and stocks depending on (a) threatened status, (b) uniqueness and (c) fish species/stocks below conservation level.

The following is a list of identified fish species/stocks of concern for the region and rationale for their selection. One or more of these target species may be present within the key buckets identified within this RMP.

Rainbow trout (RB): Surveys have shown that 70% of all fish caught by anglers in the Cariboo Region were rainbow trout. This species contributes significantly to the economy of the region. Rainbow trout are stream spawning and rearing obligatory and, as such, are sensitive to stream disturbances caused by land development. Many of the rainbow trout populations are isolated stocks with restricted ranges and locally adapted traits.

Bull trout (BT), (Dolly Varden Char): The BC Conservation Data Centre has blue-listed bull trout as sensitive due to its global decline in distribution and abundance. Bull trout are stream spawning and rearing obligatory and have very specific stream requirements. These requirements include cool temperatures, unobstructed stream migration routes and stable stream substrate with good cover. Bull trout appear to be very sensitive to stream disturbances caused by land development.

Chiselmouth (CMC) and **Brassy Minnow** (BMC): The BC Conservation Data Centre has blue-listed chiselmouth and brassy minnow due to their limited distribution in BC. The two species' habitat requirements are poorly documented, and therefore, a precautionary approach is required. Restoring pre-harvesting stream conditions is desired.

4.2 Bucket Base Map for the Cariboo Forest Region

The technical committee decided that buckets would be used as land area units for restoration instead of complete watersheds or sub-basins. The bucket map would also be used as the regional base map (see enclosed map).

Out of 398 buckets in the Cariboo Forest Region, 133 key buckets were identified and ranked across the region. Key buckets were identified on the basis of selected target fish species and presence of domestic water supply point of diversion (POD). These target fish-bearing and domestic water supply buckets were ranked on the basis of a qualitative estimation of the degree of impact and cause.

From this point onward, the buckets will be referred by bucket numbers with cross reference to the drainage name for convenient locating on the base map.

4.3 List of Key Buckets

Table 1 provides a list of the identified key buckets for the region. The table shows the drainage within which the bucket is located, the buckets as identified by bucket number, the types and number of target fish species, and the presence of a domestic water supply point of diversion corresponding to each of the key buckets. Note that some buckets were included in the list if harvesting activities in those buckets could have impacts on the downstream fish-bearing habitat.

Table 1. Buckets containing Target Fish Species and Water Supply Point of Diversion (POD).

P indicates presence
(P) indicates likelihood of presence, but further inventory required.

Forest District	Drainage Name	Bucket #	Fish species present					POD
			Rainbow Trout	Bull Trout	Chisel-mouth	Brassy Minnow	Chinook	
Quesnel	John Boyd	493	P	P			P	P
	Lightning	494	P	P			P	P
	Lower Nazko	381	P		P		P	P
	Willow	103	P	P			(P)	P
	Antler	100	P	P			(P)	P
	Fontaine	488	P	(P)				P
	Clisbako	391	P				(P)	P
	Cunningham	486	P	P			(P)	
	Swift River	483	P	P			P	
	Little Swift	490	P	P				
	Narcosli	291	P				P	P
	Victoria Ck	478	P	P				
	Sovereign	491	P	P				
	Umiti	496	P					
	Mid Nazko	381a	P		P		P	
	Big valley	106	P	P			(P)	
	Lower Bowron	104	P	P			(P)	P
	Matthew	489	P	P				
	Fraser	283	P	P			P	P
		283a	P	P			P	P
	Ramsay Ck	293	P					
	Wentworth	392	P					
	Merston	296	P					P
	Bazaeko	401	P	P			(P)	
	Bazaeko	409	P	P			P	
	Bazaeko	420	P	P			P	
	Tregallis	102	P	P				
	Ketchum	109	P	P			(P)	
	Kimball	487	P	P				
	Mcfarlane	398	P					
	Snaking	407	P					

Forest District	Drainage Name	Bucket #	Fish species present					POD
			Rainbow Trout	Bull Trout	Chisel-mouth	Brassy Minnow	Chinook	

	Bazaeko	394	P	P				
	Bazaeko	399	P				P	
	Bazaeko	402	P					
	Coglistiko	414	P					
	Summit	105	P	P				
	Udy	413	P					
	Webster	289	P					
	Twan	286	P					
	Unnamed	295	P					
	Unnamed	298	P					
Williams Lake	Williams Lake	265a	P					P
	Lower Big Creek	142a	P	(P)			(P)	P
	Lower Churn	243a	P	P			(P)	P
	McLeese Lk	290	P					P
	Hawks Creek	284	P				(P)	P
	Fredy/Beedy	462	P					P
	Chimney	271	P					P
	Mons Creek/Lake	165	P					P
	Cooper Creek	158	P					P
	150 Mile	280	P					P
	Rose Lake	285	P					P
	Upper Churn	243	P	P				
	Hungry Valley	142	P					
Horsefly	McKinley	445	P			P	(P)	P
	Wolverine	472a	P					P
	North Arm	464c	P	P				P
	Woodjam	451	P					P
	Horsefly Mainstem	453	P			P	P	P
	Keithley	480	P	P				P
	Mid Quesnel River	464a	P	P			P	P
	Likely	464b	P				P	P
	Moffat	448	P				P	P
	Cariboo Lake	472	P	P			P	P
	Little River	479	P	P			P	
	Bill Miner	464	P	P				
	Rollie	477	P					
	Roaring River	473	P	P				
	McKusky	450	P					
	Spanish	468	P	P				
	Sellers	470	P	P				
	Polley	463	P					
	Molybdenite	447	P					
	Wasko	467	P					
	Grain Creek	469	P					
	Upper Horsefly	455	P					
	Hen Ingram	465	P					P
	Tisdale	452	P					
	Watt Creek	475	P					
	Beaver Valley	456a	P				(P)	P
100 Mile House	Bonaparte River	77	P				(P)	P
	Young Lake	77a	P					P
	Fiftyseven Creek	86	P					P
	Chasm	87	P					P
	Fiftynine Creek	90	P					P
	Scott Creek	91	P					P
	Rayfield River	93	P					P

Forest District	**Drainage Name**	**Bucket #**	**Fish species present**					**POD**
			Rainbow Trout	**Bull Trout**	**Chisel-mouth**	**Brassy Minnow**	**Chinook**	
	Eagan Lake	96	P					P
	Cutoff Valley Creek	82	P					P

	Clinton	84	P					P
	Loon Lake	81	P					P
	Brown Creek	95	P					
	Murphy Lake	371	P					P
	Bridge	357a	P					P
	San Jose	273	P					P
	Jim	360	P					P
	GorgeCr/Deadman	78	P					P
	Hamilton/Deadman	85	P					P
	Lang Lake	371a	P					P
	Watch Lake	99	P					P
	Bridge/Canim	357	P					P
	Bradley	368	P					P
	Peach Creek	374	P					P
	Coffee	378	P					
	Boss	372	P					
	Hendrix	375	P					
	Deception	373	P					
	Spanish	377	P					
	Joe Ross Cr/Deadman	88	P					
	Green Lake	94	P					P
	No name(?) Creek	376	P					
Chilcotin	Chilcotin Lake	124b	P	(P)	(P)		(P)	P
	Hanceville	180	P	P			P	P
	Chilcotin	119	P	P			P	P
	Alexis Creek	190	P	P			P	P
	Upper Chilcotin	124	P	P			P	
	Haines Creek	171	P					P
	Anaham Creek	185	P					P
	Alexis Lakes	187	P					P
	Clusko	130	P		(P)		(P)	
	Charlotte Lake	70	P					P
	Kappan Lake	74	P					
	Scum Lake	171a	P					
	Zenzaco	184	P					P
	Avon Creek	188	P					P
	Mosley Creek	332a	P	P				
	Punkutlaenkut	131	P	P			(P)	
	S. Anahim Creek	186	P					
	Nimpo Creek	194	P					
	Upper Chilcotin	124a	P	P	(P)			
	Tatlayoko	327	P	P				P
		327a	P	P				P

Key buckets for ranking were initially identified by MELP Fisheries incorporating information from, but not limited to, biological studies and watershed assessments and satisfying the obligations of the Cariboo-Chilcotin Land Use Plan.

4.1 Community Watershed

The sole community watershed within the Cariboo Forest Region is that registered by the village of Clinton. The streams within the community watershed are Cutoff Valley Creek and Clinton Creek and lie within buckets 82 and 84, respectively. These two streams are tributaries to the Bonaparte River, which has been identified as a high priority watershed.

5.0 Criteria for Ranking Buckets

5.1 Prioritization Criteria and Bucket Ranking

At the present time, knowledge regarding the extent of the selected issues in each of the key buckets is limited. Hence, the prioritization criterion or issue has only two ratings – Low and High. If it is known that the issue exists in a bucket, the bucket is rated as a high priority (H) bucket. Alternatively, if the issue is non-existent, the bucket is rated as a low priority (L) bucket on that issue. Also, in some cases the technical committee was unable to confirm the presence or absence of the identified issues and was reluctant to rate the bucket as Low – in such cases, the bucket was rated as Unknown (U).

Combinations of High and Low ratings from MOF, MELP (both the Fisheries and Water Management branches) and DFO may lead to different priority ranks for the key buckets.

The basic criteria or issues used to rate each bucket are as follows.

5.1.1 MELP Fisheries Criteria

1. Fisheries Management Value – overall value of the watershed to provincial fisheries management objectives. Includes scientific research related to aquatic or fisheries resources, historical enhancement and level of use by anglers for fishing or other recreational use.

   High (H)
   Low (L)
   Unknown (U)

2. Unique Fish Species – Fish species (non-salmon) of important fisheries management concern, including threatened or endangered stock or species. e.g. bull trout, Quesnel Lake rainbow trout, chiselmouth and brassy minnow.

   Present ⇒ High (H)
   Unknown (U)
   Absent ⇒ Low (L)

3. Likelihood of decreasing fish productivity and/or fish habitat due to watershed development impacts (not necessarily limited to forest development; could be agriculture, mining, etc. that may be eligible for funding sources other than FRBC).

   High (H)
   Unknown (U)
   Low (L)

5.1.2 MELP Water Management Criteria

Point of Diversion (POD) – All POD's that include domestic water supply and community watersheds. One or more domestic licenses that exist within the watershed bucket are ranked as High (H). Buckets without domestic licenses are ranked as Low (L).

>1 ⇒ High (H)
0 ⇒ Low (L)

5.1.3 DFO Criteria

Includes significant commercial/recreational populations, First Nations fisheries values, salmon species at risk and salmon habitat at risk (from watershed development).

High (H)
Low (L)

5.1.4 MOF Criteria

The issue of stream sedimentation potential is considered for ranking a selected bucket:

Landslide induced:

The following three ratings are used:

a. No evidence on air photos or knowledge of landslides entering the stream – the bucket has Low (L) priority.
b. Knowledge or evidence of landslide entering streams – the bucket has High (H) priority.
c. Unknown – the bucket has a priority rating of (U).

or

Surface erosion:

The following three ratings are used:

a. No direct avenue for sediment to enter an ephemeral or a permanent stream or status unknown – the bucket has Low (L) priority.
b. Knowledge of direct avenue for sediment to enter an ephemeral or a permanent stream – the bucket has High (H) priority.
c. Unknown – the bucket has a priority rating of (U).

Table 3. Cariboo Forest Region Key Buckets.

Table 3 shows the list of regional key buckets for the Watershed Restoration Program. Column 1 of the table gives the name of the forest district in the region. Column 2 lists the names of drainages in which the bucket, or part of the bucket, is represented by the bucket identified by a number (Column 3). Column 3 is the list of the selected and ranked priority buckets. Column 4 represents approximate area of the buckets. Columns 5 through 8 (that shows H's and L's) represent bucket rankings by MELP Fisheries criteria, MELP Water Supply criteria, DFO criteria and MOF criteria, respectively. Column 9 (bolded **H**'s and **L**'s) presents the combined ranking by MELP (Fisheries, Water Supply), DFO and MOF criteria. Column 10 gives the names of licensees with operational interest in the bucket.

MOF District	Drainage Name	Bucket No.	Area (ha)	MELP Fisheries Ranking	Domestic Water Supply	DFO Ranking	MOF Ranking	Multi-Agency Ranking	Operability for Licencees
Quesnel	John Boyd	493	42,559	H	H	H	H	**H**	West Fraser
	Lightning	494	24,547	H	H	H	H	**H**	Weldwood
	Lower Nazko	381	42,256	H	H	H	H	**H**	
	Wiilow	103	54,864	H	H	H	H	**H**	Weldwood
	Antler	100	28,342	H	H	H	H	**H**	
	Fontaine	488	7,106	H	H	H	H	**H**	West Fraser
	Clisbako	391	67,444	H	H	H	H	**H**	
	Cunningham	486	16,639	H	L	H	H	**H**	Weldwood
	Swift River	483	39,957	H	L	H	H	**H**	
	Little Swift	490	12,812	H	L	H	H	**H**	Weldwood
	Narcosli	291	25,312	H	H	H	H	**H**	
	Victoria Creek	478	24,572	H	L	H	H	**H**	
	Sovereign	491	12,449	H	L	H	H	**H**	
	Umiti	496	15,256	H	L	H	H	**H**	West Fraser
	Mid Nazko	381a	42,167	H	L	H	H	**H**	
	Big Valley	106	21,655	H	L	H	H	**H**	West Fraser
	Lower Bowron	104	33,572	H	H	H	H	**H**	
	Matthew	489	39,744	H	L	L	H	**H**	Weldwood
	Fraser	283	63,812	L	H	H	H	**H**	
		283a	44,197	L	H	H	H	**H**	
	Ramsay Creek	293	29,206	H	L	H	H	**H**	
	Wentworth	392	15,444	H	L	H	H	**H**	
	Merston	296	27,586	H	H	L	L	**H**	
	Bazaeko	401	42,820	H	L	H	H	**H**	
	Bazaeko	409	21,006	H	L	H	H	**H**	
	Bazaeko	420	20,508	H	L	H	H	**H**	
	Tregallis	102	9,445	H	L	H	H	**H**	
	Ketchum	109	12,826	H	L	L	L	**H**	West Fraser

MOF District	Drainage Name	Bucket No.	Area (ha)	MELP Fisheries Ranking	Domestic Water Supply	DFO Ranking	MOF Ranking	Multi-Agency Ranking	Operability for Licencees
	Kimball	487	6,807	H	L	L	H	L	
	Mcfarlane	398	11,326	L	L	H	H	L	
	Snaking	407	17,633	H	L	L	L	L	
	Bazaeko	394	13,917	L	L	H	H	L	
	Bazaeko	399	9,944	L	L	H	H	L	
	Bazaeko	402	6,734	L	L	H	H	L	
	Coglistiko	414	12,591	L	L	H	H	L	
	Summit	105	6,702	H	L	L	H	L	
	Udy	413	22,145	H	L	L	L	L	
	Webster	289	20,261	L	L	L	L	L	
	Twan	286	36,635	L	L	L	L	L	
	Unnamed	295	6,600	L	L	L	L	L	
	Unnamed	298	9,222	L	L	L	L	L	
Williams Lake Lake	Williams Lake	265a	32,367	H	H	H	H	H	
	Lower Big Creek	142a	26,406	H	H	L	H	H	Riverside
	Lower Churn	243a	30,575	H	H	H	H	H	
	McLeese Lake	290	15,580	H	H	L	H	H	
	Hawks Creek	284	38,379	L	H	H	H	H	
	Fredy/Beedy	462	26,187	H	H	L	L	H	
	Chimney	271	44,212	L	H	L	H	H	
	Mons Creek/Lake	165	7,999	L	H	L	H	H	Riverside
	Cooper Creek	158	10,855	H	H	L	L	L	
	150 Mile	280	26,043	L	H	L	L	L	
	Rose Lake	285	9,963	L	H	L	L	L	
	Upper Churn	243	38,639	H	L	L	L	L	
	Hungry Valley	142	24,745	H	L	L	L	L	
Horsefly	McKinley	445	38,898	H	H	H	H	H	Weldwood
	Wolverine	472a	19,535	H	H	H	H	H	
	North Arm	464c	36,549	H	H	H	H	H	
	Woodjam	451	9,302	H	H	H	H	H	
	HorseflyMainstem	453	31,890	H	H	H	U	H	Riverside
	Keithley	480	15,090	H	H	H	H	H	Riverside
	Mid Quesnel River	464a	42,083	H	H	H	U	H	
	Likely	464b	67,025	H	H	H	U	H	
	Moffat	448	44,562	H	H	H	H	H	Weldwood
	Cariboo Lake	472	25,868	H	H	L	H	H	Lignum
	Little River	479	38,772	H	L	H	H	H	Weldwood
	Bill Miner	464	49,105	H	L	H	H	H	
	Rollie	477	6,131	H	L	H	H	H	Lignum

MOF District	Drainage Name	Bucket No.	Area (ha)	MELP Fisheries Ranking	Domestic Water Supply	DFO Ranking	MOF Ranking	Multi-Agency Ranking	Operability for Licencees
	Roaring River	473	19,598	H	L	H	H	H	West Fraser
	McKusky	450	32,000	H	L	H	H	H	
	Cameron	485	35,289	H	L	H	H	H	Weldwood
	Spanish	468	12,904	H	L	L	H	H	
	Sellers	470	8,811	H	L	L	H	H	Weldwood
	Polley	463	9,851	H	L	H	U	H	West Fraser
	Molybdenite	447	8,222	H	L	H	H	H	Weldwood
	Wasko	467	11,350	H	L	H	L	H	
	Grain Creek	469	11,378	H	L	H	H	H	Weldwood
	Upper Horsefly	455	46,384	L	L	H	H	H	Riverside
	Hen Ingram	465	9,131	H	H	L	L	H	West Fraser
	Tisdale	452	7,030	H	L	L	L	L	
	Watt Creek	475	9,984	L	L	H	H	L	
	Beaver Valley	456a	41,538	H	H	L	U	H	MELP
100 Mile House	Bonaparte River	77	35,717	H	H	H	H	H	Weldwood/Ainsworth/SBFEP
	Young Lake	77a	40,051	H	H	H	H	H	Weldwood/Ainsworth/SBFEP
	Fiftyseven Creek	86	12,820	H	H	H	H	H	
	Chasm	87	14,903	H	H	H	H	H	
	Fiftynine Creek	90	10,952	H	H	H	H	H	
	Scott Creek	91	6,261	H	H	H	H	H	
	Rayfield River	93	41,754	H	H	H	H	H	
	Eagan Lake	96	17,264	H	H	H	H	H	
**	Cutoff Valley Creek	82	11,922	H	H	H	H	H	
**	Clinton	84	14,057	H	H	H	H	H	
	Loon Lake	81	37,580	H	H	L	H	H	
	Brown Creek	95	6,445	H	L	H	H	H	
	Murphy Lake	371	31,490	H	H	L	H	H	
	Bridge	357a	72,753	H	H	L	H	H	Ainsworth/SBFEP
	San Jose	273	12,903	H	H	L	H	H	Weldwood/Ainsworth
	Jim	360	39,828	H	H	L	H	H	Weldwood/Ainsworth/SBFEP
	Gorge Creek/Deadman	78	4,151	H	H	L	H	H	
	Hamilton/Deadman	85	11,419	H	H	L	H	H	
	Lang Lake	371a	27,977	H	H	L	H	H	
	Watch Lake	99	7,834	L	H	L	H	H	
	Lower Bridge/Canim	357	45,152	L	H	L	H	H	
	Bradley	368	23,268	L	H	L	H	H	
	Peach Creek	374	9,443	L	H	L	H	H	
	Coffee	378	11,432	H	L	L	H	H	Weldwood
	Boss	372	13,889	H	L	L	H	H	
	Hendrix	375	15,978	H	L	L	H	H	Weldwood

** Indicates Community Watershed

MOF District	Drainage Name	Bucket No.	Area (ha)	MELP Fisheries Ranking	Domestic Water Supply	DFO Ranking	MOF Ranking	Multi-Agency Ranking	Operability for Licencees
	Deception	373	32,240	H	L	L	H	H	Weldwood
	Spanish	377	14,876	H	L	L	H	H	
	Joe Ross Cr/Deadman	88	9,548	H	L	L	H	L	
	Green Lake	94	24,916	L	H	L	L	L	
	No name(?) Creek	376	6,083	L	L	L	H	L	
Chilcotin	Chilcotin Lake	124b	30,366	H	H	H	H	H	
	Hanceville	180	26,256	H	H	H	U	H	
	Chilcotin	119	27,669	H	H	H	L	H	
	Alexis Creek	190	31,215	H	H	L	H	H	
	Upper Chilcotin	124	27,252	H	L	H	H	H	
	Haines Creek	171	43,951	L	H	L	H	H	
	Anaham Creek	185	46,058	L	H	L	H	H	Lignum and Riverside
	Alexis Lakes	187	30,443	L	H	L	H	H	Lignum and Riverside
	Tatlayoko	327	49,023	H	H	L	H	H	Riverside
	Tatlayoko	327a	25,477	H	H	L	H	H	Riverside
	Clusko	130	45,815	H	L	L	H	L	
	Charlotte Lake	70	39,374	L	H	L	L	L	
	Kappan Lake	74	16,911	L	L	L	H	L	
	Scum Lake	171a	18,243	L	L	L	H	L	
	Zenzaco	184	11,965	L	H	L	H	L	
	Avon Creek	188	16,039	L	H	L	H	L	
	Mosley Creek	332a	43,570	H	L	L	L	L	Riverside
	Punkutlaenkut	131	32,943	L	L	H	L	L	
	S. Anahim Creek	186	11,830	L	L	L	H	L	
	Nimpo Creek	194	12,616	L	L	L	L	L	
	Upper Chilcotin	124a	41,653	L	L	L	L	L	

5.2 Transition Buckets

The transition buckets category covers drainages with some initial FRBC investment that do not meet current high priority criteria. The continued work on transition buckets will be completed by March 31, 2001.

Table 4. List of Transition Watersheds by MOF Forest District, Bucket Number and Recipient.

MOF District	Drainage Name	Bucket No.	Recipient
Chilcotin	Marjorie Creek	353	MELP
	Anaham Creek	185	Riverside
	Alexis Lakes	187	
	Mosley Creek	332a	
	Tatlayoko	327	
	Tatlayoko	327a	
	Moore Creek	132	
	Clusko River	130	
	Unnamed	129	
	Upper Bidwell Creek	183	
	South Anaham Creek	186	
	McDermott	169	
	Scum Lake	171a	
	Bidwell Creek	179	
Willliams Lake	Bambrick Creek	161	Riverside
	Unnamed Creek	166	
	Hungry Valley Creek	142	
	Big Creek Mainstem	142b	
	Groundhog Creek	155	
	Cooper Creek	158	
	Gaspard Creek	168	
	Farwell Creek	170	

5.3 Weighting of Bucket Ranking

MELP Fisheries ranking used three criteria – fisheries management values, unique fish species, and likelihood of decreasing fish productivity and/or fish habitat. These rankings formed 50% of the multi-agency input for ranking key buckets. The three criteria were combined into one MELP Fisheries ranking and then incorporated with domestic water supply (MELP Water), DFO and MOF rankings.

Criteria for MELP's Fisheries rankings were rated as categories High (H), Unknown (U), and Low (L). A working draft spreadsheet was developed for ranking key buckets using a numbering system to avoid a subjective ranking decision process. Each of the three fisheries columns was given a numerical value for High, Unknown and Low. For example, a High = 3, Unknown = 2 and a Low = 1. The highest score, for example, across the three columns would be nine (9) for three highs. The cutoff between a high ranking and a low ranking was arbitrarily decided as six. In other words, if the numerical sum of the three columns was greater than six then the bucket was ranked as a High; if five or less, then it was ranked Low. The Unknown (U) category was used occasionally under the unique fish species column where there is limited fish inventory information.

The similar numerical process was applied for ranking domestic water supply, DFO and MOF. For weighting purposes, domestic water supply ranking of High was given a two and low a zero. For DFO and MOF, a High was a three and a Low a one. In addition, the Unknown (2) category was included with MOF's ranking for lack of surface erosion and landslide information within the bucket.

Once ranking and scoring information was obtained from all the agencies involved, the ranking numbers were totaled across the spreadsheet and entered into the multi-agency column. A maximum score for the watershed sub-basin would be seventeen. A score of eleven or higher would give a multi-agency ranking for the watershed sub-basin a High (H) and a score of ten or lower would produce a ranking of Low (L).

Finally, one important note is that the multi-agency ranking by MELP Fisheries and DFO criteria were given more weight. For example, when MELP Fisheries and DFO criteria were Low, the final rating of the bucket was also Low despite a high MOF rating.

5.4 Cost Estimates

Table 5 shows the estimated restoration funding required for all key buckets. These estimates will require revisions once project buckets (20% of high priority key watersheds) have been selected and the full extent of work in each of these is known. Presumably, this information would be obtained during the development of a restoration plan on a bucket basis.

The estimated funds required to finish each bucket correspond to years 2 to 5 of this plan. These totals represent a prorated reduction of expenditure, which is equivalent to 10 percent of the 2000/01 estimate in each of the four years. That is, it is expected that year 5 expenditures will constitute 60 percent of the first year's (2000/01) estimated costs of restoration. The estimates shown in Table 5 were obtained from cost estimates done by MOF district staff and MELP regional staff in April 1998, when MOF and MELP were directly involved in managing costs for restoration activities undertaken by forest licensees.

Table 5. Cost Estimates of the Ranked Buckets for the Year 2000/2001.

MOF District	Drainage Name	Bucket #	Bucket Area (ha)	Multi-Agency Ranking	Est'd Funds Required for 2000/2001 ($)	Est'd Funds Required to Finish ($)
Quesnel	John Boyd	493	42,559	H	160,000	480,000
	Lightning	494	24,547	H	160,000	480,000
	Lower Nazko	381	42,256	H	73,000	219,000
	Willow	103	54,864	H	255,000	765,000
	Antler	100	28,342	H	Mining activity impacts	Mining activity impacts
	Fontaine	488	7,106	H	0	0
	Clisbako	391	67,444	H	73,000	219,000
	Cunningham	486	16,639	H	167,000	501,000
	Swift River	483	39,957	H	150,000	450,000
	Little Swift	490	12,812	H	160,000	480,000
	Narcosli	291	25,312	H	26,000	78,000
	Victoria Creek	478	24,572	H	150,000	450,000

MOF District	Drainage Name	Bucket #	Bucket Area (ha)	Multi-Agency Ranking	Est'd Funds Required for 2000/2001 ($)	Est'd Funds Required to Finish ($)
Quesnel	Sovereign	491	12,449	H	160,000	480,000
	Umiti	496	15,256	H	80,000	240,000
Quesnel (cont'd)	Mid Nazko	381a	42,167	H	73,000	219,000
	Big Valley	106	21,655	H	127,000	381,000
	Lower Bowron	104	33,572	H	140,000	420,000
	Matthew	489	39,744	H	170,000	510,000
	Fraser	283	63,812	H	Not available	Not available
		283a	44,197	H		
	Ramsay Creek	293	29,206	H	76,000	228,000
	Wentworth	392	15,444	H	73,000	219,000
	Merston	296	27,586	H	95,000	285,000
	Bazaeko	401	42,820	H	35,000	105,000
	Bazaeko	409	21,006	H	35,000	105,000
	Bazaeko	420	20,508	H	35,000	105,000
	Tregallis	102	9,445	H	227,000	681,000
	Ketchum	109	12,826	H	240,000	720,000
	Kimball	487	6,807	L	135,000	405,000
	Mcfarlane	398	11,326	L	73,000	219,000
	Snaking	407	17,633	L	73,000	219,000
	Bazaeko	394	13,917	L	35,000	105,000
	Bazaeko	399	9,944	L	35,000	105,000
	Bazaeko	402	6,734	L	35,000	105,000
	Coglistiko	414	12,591	L	35,000	105,000
	Summit	105	6,702	L	Mining activity impacts	Mining activity impacts
	Udy	413	22,145	L	73,000	219,000
	Webster	289	20,261	L	26,000	78,000
	Twan	286	36,635	L	26,000	78,000
	Unnamed	295	6,600	L	26,000	78,000
	Unnamed	298	9,222	L	26,000	78,000
Williams Lake	Williams Lake	265a	32,367	H	67,000	201,000
	Lower Big Creek	142a	26,406	H	35,000	105,000
	Lower Churn	243a	30,575	H	105,000	315,000
	McLeese Lake	290	15,580	H	Not available	Not available
	Hawks Creek	284	38,379	H	Not available	Not available
	Fredy/Beedy	462	26,187	H	83,000	249,000
	Chimney	271	44,212	H	Not available	Not available
	Mons Creek/Lake	165	7,999	H	105,000	315,000
	Cooper Creek	158	10,855	L	105,000	315,000
	150 Mile	280	26,043	L	67,000	201,000
	Rose Lake	285	9,963	L	Not available	Not available
	Upper Churn	243	38,639	L	105,000	315,000
	Hungry Valley	142	24,745	L	105,000	315,000
Horsefly	McKinley	445	38,898	H	98,000	294,000
	Wolverine	472a	19,535	H	67,000	201,000
	North Arm	464c	36,549	H	12,000	36,000
	Woodjam	451	9,302	H	12,000	36,000
	Horsefly Mainstem	453	31,890	H	98,000	294,000
	Keithley	480	15,090	H	150,000	450,000
	Mid Quesnel River	464a	42,083	H	0	0
	Likely	464b	67,025	H	12,000	36,000
	Moffat	448	44,562	H	98,000	294,000
	Cariboo Lake	472	25,868	H	67,000	201,000
	Little River	479	38,772	H	67,000	201,000
	Bill Miner	464	49,105	H	50,000	150,000
	Rollie	477	6,131	H	120,000	360,000

MOF District	Drainage Name	Bucket #	Bucket Area (ha)	Multi-Agency Ranking	Est'd Funds Required for 2000/2001 ($)	Est'd Funds Required to Finish ($)
	Roaring River	473	19,598	H	12,000	36,000
	McKusky	450	32,000	H	98,000	294,000
Horsefly	Cameron	485	35,289	H	50,000	150,000
	Spanish	468	12,904	H	170,000	510,000
	Sellers	470	8,811	H	175,000	525,000
	Polley	463	9,851	H	12,000	36,000
Horsefly (Cont'd)	Molybdenite	447	8,222	H	98,000	294,000
	Wasko	467	11,350	H	12,000	36,000
	Grain Creek	469	11,378	H	12,000	36,000
	Upper Horsefly	455	46,384	H	240,000	720,000
	Hen Ingram	465	9,131	H	12,000	36,000
	Tisdale	452	7,030	L	50,000	150,000
	Watt Creek	475	9,984	L	12,000	36,000
	Beaver Valley	456a	41,538	H	35,000	105,000
100 Mile House	Bonaparte R	77	35,717	H	100,000	300,000
	Young Lake	77a	40,051	H	100,000	300,000
	Fiftyseven	86	12,820	H	50,000	150,000
	Chasm	87	14,903	H	50,000	150,000
	Fiftynine	90	10,952	H	50,000	150,000
	Scott Creek	91	6,261	H	75,000	225,000
	Rayfield River	93	41,754	H	75,000	225,000
	Eagan Lake	96	17,264	H	100,000	300,000
	Cutoff Valley Creek	82	11,922	H	20,000	60,000
	Clinton	84	14,057	H	20,000	60,000
	Loon Lake	81	37,580	H	50,000	150,000
	Brown Creek	95	6,445	H	66,000	198,000
	Murphy Lake	371	31,490	H	66,000	198,000
	Bridge	357a	72,753	H	309,000	927,000
	San Jose	273	12,903	H	167,000	501,000
	Jim	360	39,828	H	215,000	645,000
	Gorge Creek/Deadman	78	4,151	H	50,000	150,000
	Hamilton/Deadman	85	11,419	H	50,000	150,000
	Lang Lake	371a	27,977	H	90,000	270,000
	Watch Lake	99	7,834	H	50,000	150,000
	Lower Bridge/Canim	357	45,152	H	309,000	927,000
	Bradley	368	23,268	H	66,000	198,000
	Peach Creek	374	9,443	H	66,000	198,000
	Coffee	378	11,432	H	166,000	498,000
	Boss	372	13,889	H	200,000	600,000
	Hendrix	375	15,978	H	200,000	600,000
	Deception	373	32,240	H	200,000	600,000
	Spanish	377	14,876	H	200,000	600,000
	Joe Ross Cr/Deadman	88	9,548	L	200,000	600,000
	Green Lake	94	24,916	L	50,000	150,000
	No name(?) Creek	376	6,083	L	55,000	165,000
Chilcotin	Chilcotin Lake	124b	30,366	H	60,000	180,000
	Hanceville	180	26,256	H	35,000	105,000
	Chilcotin	119	27,669	H	31,000	93,000
	Alexis Creek	190	31,215	H	31,000	93,000
	Upper Chilcotin	124	27,252	H	130,000	390,000
	Haines Creek	171	43,951	H	65,000	195,000
	Anaham Creek	185	46,058	H	90,000	270,000
	Alexis Lakes	187	30,443	H	55,000	165,000
	Tatlayoko	327	49,022	H	Not available	Not available
		327a	25,476	H	Not available	Not available
	Clusko	130	45,815	L	65,000	195,000
	Charlotte Lake	70	39,374	L	Not available	Not available
MOF District	**Drainage Name**	**Bucket #**	**Bucket Area (ha)**	**Multi-Agency Ranking**	**Est'd Funds Required for 2000/2001 ($)**	**Est'd Funds Required to Finish ($)**

MOF District	Drainage Name	Bucket #	Bucket Area (ha)	Multi-Agency Ranking	Est'd Funds Required for 2000/2001 ($)	Est'd Funds Required to Finish ($)
Chilcotin	Kappan Lake	74	16,911	L	53,000	159,000
	Scum Lake	171a	18,243	L	75,000	225,000
	Zenzaco	184	11,965	L	31,000	93,000
	Avon Creek	188	16,039	L	31,000	93,000
	Mosley Creek	332a	43,570	L	Not available	Not available
	Punkutlaenkut	131	32,943	L	31,000	93,000
	S. Anahim Creek	186	11,830	L	31,000	93,000
	Nimpo Creek	194	12,616	L	53,000	159,000
	Upper Chilcotin	124a	41,653	L	31,000	93,000
				Total	**$10,517,000**	**$31,551,000**

Summary of Estimated Costs for High Priority Buckets By District

District	Total 2000/01	Total Years 2 to 5	Total
Quesnel	$2,940,000	$8,820,000	$11,760,000
Williams Lake	$290,000	$870,000	$1,160,000
Horsefly	$1,742,000	$5,226,000	$6,968,000
100 Mile House	$3,160,000	$9,480,000	$12,640,000
Chilcotin	$497,000	$1,491,000	$1,988,000
Total	$8,629,000	$25,887,000	$34,516,000

6.0 District Assessments for Current Resource Management Plan

The following tables provide assessments for the current (1999/2000) resource management plan against the regional list of key buckets, as a continuation of current activities. This assessment indicates whether a bucket from the current RMP (1999/2000) is identified as a key bucket in the 2000/2001 RMP, rating the buckets for target fish species, domestic water supply criteria and defined categories. **Table 6. Quesnel Forest District Assessment for the 1999/2000 RMP.**

Category I – Buckets that have known impacts from past pre-Forest Practices Code forestry that will potentially benefit from restoration activities.
Category II – Buckets with significant impacts from other land use (or private land development) that will potentially benefit from restoration activities.

Drainage Name	Bucket #	Key Bucket?	Priority for:		Category	Implementing Partners	Transition Bucket?
			Fish	Domestic Water Supply			
John Boyd	493	YES	H	H	I & II	MOF, Weldwood, West Fraser	
Towkuh	104	YES	H	H	I & II	MOF, Weldwood	
Ketcham	109	YES	H	L	I & II	MOF, West Fraser	
Antler	100	YES	H	H	I & II	MOF, West Fraser	
Cunningham	486	YES	H	L	I	MOF, Weldwood	
Drainage Name	**Bucket #**	**Key Bucket?**	**Priority for:**		**Category**	**Implementing Partners**	**Transition Bucket?**
Kimball	487	YES	H	L	I	MOF, Weldwood	
Matthew	489	YES	H	L	I	MOF, Weldwood	

Rebman	103	YES	H	H	I	MOF, Weldwood	
Big Valley	106	YES	H	L	I	MOF, West Fraser	
Sugar	102	YES	H	L	I & II	MOF, West Fraser	
Nazko Falls	381a	YES	H	L	I & II	MOF, Slocan	
Brown Creek	390	NO				MOF, Slocan	
Udy Creek	413	YES	H	L	I	MOF, Slocan	
Marmot	381	YES	H	H	I & II	MOF, Slocan	
Ramsey	293	YES	H	L	I & II	MOF, Tolko	
South Ramsey	294	NO				MOF, Tolko	
Narcosli	291	YES	H	H	I & II	MOF, Tolko	
?	303	NO				Slocan	
?	297	NO				Slocan	
?	304	NO				Slocan	
?	300	NO				Slocan	
?	297	NO				Slocan	
?	296	YES	H	H	I & II	Slocan	
?	299	NO				Slocan	

Table 7. Williams Lake Forest District Assessment for the 1999/2000 RMP.

Category I – Buckets that have known impacts from past pre-Forest Practices Code forestry that will potentially benefit from restoration activities.

Category II – Buckets with significant impacts from other land use (or private land development) that will potentially benefit from restoration activities.

Drainage Name	Bucket #	Key Bucket?	Priority for:		Category	Implementing Partners	Transition Bucket?
			Fish	Domestic Water Supply			
Big Creek	161	NO			I	Riverside???	
	166	NO			I	Riverside	
	155	NO					
	158	YES	H	H	I	MOF	Yes
	142b	NO					
	165	YES	L	H	I & II	MOF	
	168	NO					
	142a	YES	H	H	I & II	MOF	
	142	YES	H	L	I	MOF	Yes
Lower Chilcotin	170	NO			I	Riverside	
Beaver Valley	456a	YES	H	H	I & II		
Fredy/Beedy	462	YES	H	H	I	MOF	
Fraser Corridor	282	NO					
	284	YES	L	H	I & II		
	290	YES	H	H	I & II		
	271	YES	L	H	I & II		
Gaspard	260a	NO					

Table 8. Horsefly Forest District Assessment for the 1999/2000 RMP.

Category I – Buckets that have known impacts from past pre-Forest Practices Code forestry that will potentially benefit from restoration activities.
Category II – Buckets with significant impacts from other land use (or private land development) that will potentially benefit from restoration activities.

Drainage Name	Bucket #	Key Bucket?	Priority for:		Category	Implementing Partners	Transition Bucket?
			Fish	Domestic Water Supply			
MacKay	455	YES	L	L	I	Riverside	
Cariboo						MOF, Weldwood, Riverside Lignum	
						MOF, Weldwood, Riverside Lignum	
Sellers	470	YES	H	L	I & II	Weldwood	
Horsefly						Riverside, Lignum Weldwood, Ainsworth	
						Riverside, Lignum Weldwood, Ainsworth	
McKusky	450	YES	H	L	I	Riverside	
Harveys	Part of 472	YES	H	H		MOF	
Moffat	448	YES	H	H	I & II	Weldwood, Lignum	
Quesnel River						Weldwood, West Fraser, Ainsworth	
						Weldwood, West Fraser, Ainsworth, Riverside	
						Weldwood, West Fraser, Ainsworth, Riverside	
Grain	469	YES	H	L	I	Weldwood	
Little River	479	YES	H	L	I	Weldwood	
Spanish	474	NO				Weldwood	
Bill Miner	464	YES	H	L	I	Riverside	
Edney/Hazeltine	463	YES	H	L	I	Riverside	
McKinley	445	YES	H	H	I	Riverside, Weldwood	
Woodjam	451	YES	H	H	I & II	Lignum, Riverside	
Tisdall	452	YES	H	L	I	Weldwood, Riverside	
Molybdenite	447	YES	H	L	I & II	Weldwood	
Roaring River	473	YES	H	L	I	West Fraser	
Watt Creek	475	YES	L	L	I	West Fraser	
Long Creek	464C	YES	H	H	I	West Fraser	
Penfold	481	NO				West Fraser	
Niagara	471	NO				West Fraser	
Keithley	480	YES	H	H	I & II	Riverside, Lignum	
Rollie	477	YES	H	L	I & II	Riverside, Lignum	
Gavin	Part of 456A	YES	H	H	I & II	UBC Alex Fraser Research Forest	

Table 9. 100 Mile House Forest District Assessment for the 1999/2000 RMP.

Category I – Buckets that have known impacts from past pre-Forest Practices Code forestry that will potentially benefit from restoration activities.
Category II – Buckets with significant impacts from other land use (or private land development) that will potentially benefit from restoration activities.

Drainage Name	Bucket #	Key Bucket?	Priority for:		Category	Implementing Partners	Transition Bucket?
			Fish	Domestic Water Supply			
Bonaparte	77a	YES	H	H	I & II	Ainsworth	
	95	YES	H	L	I	Ainsworth	
	91	YES	H	H	I	Ainsworth	
Bridge	357a	YES	H	H	I & II	Ainsworth	
	361	NO				Ainsworth	
Horsefly	Part of 445	NO				Weldwood	
Fraser	261	NO				Lignum	
	259	NO				Lignum	
	263	NO				Lignum	
	258	NO				Lignum	
San Jose	273	YES	H	H	I & II	MOF	
	272	NO				MOF	
	268	NO				MOF	
Eagle/Bradley	378	YES	H	L	I	Weldwood, MOF	
	371	YES	H	H	I	Weldwood, MOF	
	376	YES	L	L	I	Weldwood, MOF	
	374	YES	L	H	I	Weldwood, MOF	
	371a	YES	H	H	I	Weldwood, MOF	
Boss	375	YES	H	L	I & II	Weldwood, MOF	
	372	YES	H	L	I & II	Weldwood, MOF	
Deadman	78	YES	H	H	I & II	Ainsworth	
	88	YES	H	L	I & II	Ainsworth	
	77	YES	H	H	I & II	Ainsworth	
Deception	377	YES	H	L	I	Weldwood, MOF	
	373	YES	H	L	I	Weldwood, MOF	
Jim	360	YES	H	H	I & II	Ainsworth, Weldwood, MOF	
Bonaparte	83	NO				Ainsworth	
	81	YES	H	H	I & II	Ainsworth	
	90	YES	H	H	I & II	Ainsworth	
	87	YES	H	H	I & II	Ainsworth	
	77	YES	H	H	I & II	Ainsworth	
Fraser	254	NO				Lignum	
	248	NO				Lignum	
	230	NO				Lignum	
	244	NO				Lignum	
	251	NO				Lignum	
	240	NO				Lignum	

Table 10. Chilcotin Forest District Assessment for the 1999/2000 RMP.

Category I – Buckets that have known impacts from past pre-Forest Practices Code forestry that will potentially benefit from restoration activities.
Category II – Buckets with significant impacts from other land use (or private land development) that will potentially benefit from restoration activities.

Drainage Name	Bucket #	Key Bucket?	Priority for:		Category	Implementing Partners	Transition Bucket?
			Fish	Domestic Water Supply			
Anahim Roundtable Interest area		YES	L	L	I	Yun Ka Whu'ten, MOF	
Anaham Creek	184	YES	L	H	I & II	Lignum, MOF	
	185	YES	L	H	I & II	Lignum, MOF	
	186	YES	L	L	I & II	Lignum, MOF	Yes
Alexis Creek	187	YES	L	H	I & II	Riverside, MOF	
	188	YES	L	H	I	Riverside, MOF	
	189	NO				Riverside, MOF	
Clearwater Lake	353	NO				Kleena Kleene Resource Assoc.	
Bidwell Creek	179	NO				Riverside	
	183	NO				Riverside	
Haines Creek	169	NO				Riverside, MOF	
	171	YES	L	H	I	Riverside, MOF	
	171a	YES	L	L	I	Riverside, MOF	Yes
Homathko/Mosley	327a	YES	H	H	I & II	Tatlayoko Woodlot Assoc.	
	327	YES	H	H	I & II	Tatlayoko Woodlot Assoc.	
	338	NO					
Nazko	382	NO				Slocan, MOF	
Chezacut	124a	YES	L	L	I	Riverside	
	132	NO				Riverside	
	130	YES	H	L	I	Riverside	Yes
	124	YES	H	L	I	Riverside	
	129	NO				Riverside	
	128	NO				Riverside	
Chilcotin River	126	NO				MOF	
	127	NO				MOF	
	123	NO				MOF	
	125	NO				MOF	
	121	NO				MOF	
	121a	NO				MOF	
	120	NO				MOF	
	118a	NO				MOF	
	118	NO				MOF	
	118b	NO				MOF	
	116	NO				MOF	
	115	NO				MOF	
	117	NO				MOF	

APPENDIX H: TECHNICAL CONSULTATION REPORT

RESOURCE MANAGEMENT PLAN

TECHNICAL CONSULTATION REPORT

Cariboo Forest Region
September 30, 1999

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Introduction

This report is submitted in partial fulfilment of the reporting requirements of the Services agreements between Forest Renewal BC and the British Columbia Ministry of Forests and the Ministry of Environment, Lands and Parks.

This report contains the summaries of meetings held as part of the Resource Management Planning process for the five year period commencing on April 1,2000 and ending on March 31, 2005. The meetings included the above mentioned government agencies and the primary stakeholders (Major Forest Licensees, Woodlot Licensee representatives and research agencies (UBC Research Forest)). Resource stewardship activities, priorities and activity levels were discussed and are included in the Resource Management Plan for the Cariboo Forest Region. Resource activities within the Cariboo Environment Region, outside of the Cariboo Region will be included in the appropriate neighbouring Region Resource Management Plan

This report is broken down into three sections, reflecting the three Forest Renewal BC land based strategic objectives of: i) Sustainable Harvest; ii) Strengthening Sustainable Harvest, and; iii) Enhancing Environmental Values.

100 Mile House TSA
Resource Management Plan

Sustainable Harvest

Meeting Summary
July 27, 1999, 9:00 am
Ministry of Forests conference room, 100 Mile House

In Attendance

Dawn State	MOF, 100 Mile House district
Ken Blom	MOF, 100 Mile House district
Guy Newsome	MOF, Cariboo
Val Duffin	Weldwood
Al Hicks	Weldwood
Kim Peel	Lignum
Paul Christianson	Ainsworth
Wayne Nuyens	Ainsworth

Following a general introduction of the objectives of the Sustainable Harvest Objective, the group jumped right into development of a list of all possble treatments. The discussion of what the TSA Strategic Objective was did not occur until later in the meeting. The following is what is interpreted to be the strategic objective to the 100 Mile TSA.

The objective of the Sustainable Harvest RMP for the 100 Mile House TSA is to present a program, plan, set of silvicultural treatments or silvicultural studies that will increase the available timber supply through the mid to long term by a minimum of 300,000 m3.

List of Potential Treatments

1. Planting of trees sowed for year 2000, 184K on 207 ha
2. Brushing Impeded Stands, 1000 ha per year
   - including 300 ha of weed whacking by Weldwood.
3. Backlog Surveys, 10,000 ha/yr
4. Mechanical Site Prep and Sowing Request for 132 ha.
5. Juvenile Spacing, Max Density, Sanitation, Layer 3, 2000 ha/yr
6. Incremental Planting,
7. Fertilization
8. Pruning
9. Fertilization an Commercial Thinning
10. Site Index, potential SFM Objective - priority area is Big Bar

11. Forest Health
    - Budworm Spray
    - Bark Beetle Spray
    - Ice Damage
    - Root Rot Area Restoration
    - Sanitation Spacing
12. Current Fire and Pests - NSR Budworm Damaged stands
13. Roads and Landings Rehab - site restoration
14. Range Maintenance, enhancements and interactions
15. Restoration of Reverted Ag Lease Areas
16. Commercial Thinning Opportunities
17. Completion of On-going Projects - Navratil Aspen Plots
18. Genetic Improvement
19. Study of Biodiversity Area impacts on AAC - possible SFM project

A large amount of effort was spent on developing a set of treatment opportunities and projected response/gain. A Spreadsheet was developed to summarize the opportunities.

100 Mile House TSA
Resource Management Plan

Sustainable Harvest

Meeting Summary
August 31, 1999, 9:00 am
Ministry of Forests conference room, 100 Mile House

In Attendance

Dawn State	MOF, 100 Mile House district
Ken Blom	MOF, 100 Mile House district
Don Wright	MOF, 100 Mile House district (forest health input)
Guy Newsome	MOF, Cariboo
Ray Leduc	MOF, Cariboo
Stan Gripich	Forest Renewal BC
Troy Larden	MELP, region
Clinton Webb	MELP, Chilcotin district/region
Val Duffin	Weldwood
Al Hicks	Weldwood
Kim Peel	Lignum
Jane Perry	Consultant (scribe)

Overview by Guy of progress since July 27 meeting and review of today's agenda.

Review of strategic objective from July 27 — emphasis is on "increasing the available timber supply through the mid to long term by a minimum of 300,000 m^3 *while maintaining and/or enhancing habitat supply.*" (added today).

The RMP will be annually reviewed and updated as required.

List of potential treatments from TISC analysis and committee input — used to create table prepared by Val Duffin. (Table needs conversion to RMP format.)

Review and Revision of Numbers in Table (meeting focus).
**Val made changes directly on her laptop for later distribution of the Excel spreadsheet.

- Aiming to eliminate backlog NSR in 5 years (may not be logistically feasible though).
- Most brushing is single-entry manual treatment for herbaceous (weed-wacking) or deciduous (brush saws) to achieve FG.
- Juvenile spacing effects on habitat — need to consider at planning table and add to RMP. SRP process taking habitat impacts from treatment into consideration.

- Some priorities affected by TSR base case scenarios — treatments required now and are high priority.
- Incremental planting to reach target density on stocked, high sites with low site occupancy.
- Need to define future status of PA 16 stands after harvest (conifer production?) since PA 16 is a 25-year license. Licensee regenerates and meets FG requirements.
- Forest health issues — Surveys and treatments for budworm, root rot, bark beetles. Treatment needed early to be most cost-effective with minimal environmental impact. Recent forest health budgets have been well under required amounts. Since the RMP is a stewardship plan reflecting real needs, forest health numbers have been adjusted (increased) accordingly closer to required historic levels.
- **Studies** required on interactions of forest health treatments and habitat quality and quantity but the specifics will not be refined until revised RMP (spring 2000).

Discussion of how to report on anticipated gains from investments and what the gains represent (including required conditions to meet). Another factor is the incorporation of the Allowable Cut Effect to harvest increased growing stock created from incremental silviculture after the treatment, not at rotation. **Critical to maintain treatment investment** — costs will be included to monitor future stand condition. 10% overhead costs will be included in the per ha treatment costs.

Action: Spreadsheet will be distributed for committee members to review priorities and provide feedback. The need for a meeting in September will be determined later.

Discussion on how to present top priorities ("realistically achievable") to FRBC. That is done through the investment plan which is separate from the RMP and includes other FRBC considerations and priorities.

FRBC 2000/01 Land-Based Allocations

- Distributed and reviewed by Stan.
- Total $16,080,000 for region with $2.6 million in MYA allocation to 100 Mile House TSA. The 100 Mile House TSA proportion of 18.3% would also apply to allocations for the three strategic objectives, but would have to be fine tuned at the Planning Table in development of the resource investment plan.

Meeting adjourned at 3:35 pm.

Quesnel TSA
Resource Management Plan

Sustainable Harvest

Meeting Summary
July 8, 1999, 10:00 am
Ministry of Forests conference room, Quesnel

In attendance:

Glenys Rutledge	MOF
Mike Pelchat	MOF
Charles Von Hahn	Slocan
Al Hunter	West Fraser Mills
Gerry Powell	Weldwwod
Wayne Boudreau	Tolko
Chris Guppy	MELP
Ray Leduc	MOF
Guy Newsome	MOF

Objective of the meeting was to establish treatment priorities as per the TISC analysis.

4800 ha of backlog is slated to be gone in 10 years, majority in 5 years.

Site Index Adjustment: Similar to TFLs 5 and 52. Largest gain is in the short to mid-term benefit. Maybe possible for funding under SH and SFM. Plan to complete 7 or 8 supply blocks based on a 2 year program. Cost estimates to come from Earl Spielman. ~$500K/yr. Include the Kluskus SB in long term as has a high proportion of Low site. Concern of using SIBEC as not statistically sound.

Brushing: Need surveys, to be completed in 1999 and 2000.

Abandoned Agriculture Land: Need to assess opportunity.

Incremental Planting: Surveys to establish opportunity. Combined brushing and fill planting.

Fertilization: Feeling that benefit would be higher than the TISC report indicated. Need to establish a manageable threshold level.

Genetically Improved Stock: Use Class A seed in all regeneration activities where available.

Density Management: All stands intended for fertilization are priority.. Most high density areas have been treated. Marginal density or diseased stands are left.

Pruning for Wood Quality: Not viewed as a high priority, and considered more as social forestry.

Habitat Supply: Develop stand diversity opportunities. ~5% of spaced stands should be spaced to low density and pruned. Riparian areas targeted to larger wider spaced stems to promote understory and grizzly bear habitat. Wildlife/Danger Tree management and effects on coarse woody debris. Goshawk promotion by wide spacing, pruning and fertilization.

Next Meeting: Scheduled for July 22 @ 13:30 at Quesnel District Office.

Action Item: Mike Pelchat to run ISIS for Backlog and Impeded stands.

Quesnel TSA
Resource Management Plan

Sustainable Harvest

Meeting Summary
July 22, 1999, 10:00 am
Ministry of Forests conference room, Quesnel

In Attendance

Gerry Powell	Weldwood
Mike Pelchat	MOF
Ray Leduc	MOF
Charles Von Hahn	Slocan
Guy Newsome	MOF

Distributed minutes from the July 8, 1999 meeting

Mike provided NSR reports by licensee operating / responsibility areas. List of potential fertilization areas by licensee, plus ones previously fertilized. Also provided a short list of areas pruned. ~675ha

Need to develop a report on areas planted over the last 5 years that have no further treatments scheduled. Need to use Access to analyse, Mike to contact Dave Maitland.

Mike to forward the opportunity tables to the licensees to complete first draft. District will roll these up and forward to region. Major Licensees will declare areas where they will cover as per agreed mapsheets.

Abandoned Ag Leases: Get a consultant to review opportunities on the whole region. Suggested Weldwood as potential licensee as they have operations in all 3 TSAs (likely hire McNaughton as this way originally his idea)

Next Meeting: Thursday September 2, 1999 at 1:30pm in Quesnel Office.

Quesnel TSA
Resource Management Plan

Sustainable Harvest

Meeting Summary
September 7, 1999, 10:00 am
Ministry of Forests conference room, Quesnel

In Attendance

Mike Pelchat	Ministry of Forests, Quesnel district
Guy Newsome	Ministry of Forests, Cariboo region
Ray Leduc	Ministry of Forests, Cariboo region
Charles von Hahn	Slocan Forest Products
Gerry Powell	Weldwood
Roland Jarrett	West Fraser
Rob Cochrane	West Fraser
Grant Glessing	Tolko
Stan Gripich	Forest Renewal BC (morning)
Troy Larden	Ministry of Environment, Lands and Parks, region (morning)
Jane Perry	Consultant (scribe)

Guy reviewed action from last meeting on July 22.

ISIS

Discussion of the need for review of ISIS summaries to determine status of each opening. Reviewing opening files is the most useful way of identifying NSR areas. The extensive review of block status would need to be handled externally by a consultant or licensees would cover their respective planning areas. Licensees need access to ISIS input and reports since FS has very limited staff to do this anymore and ISIS is not being kept current for planning treatments other than backlog SP's.

Action: Licensees will report changes in SR/NSR status and inventory/silviculture labels to the FS for entering into ISIS.

Action: Licensees support access to ISIS to minimize the ineffectiveness of separate FS/licensee systems and reduce errors from a second level of data entry. At a provincial scale, access by licensees to ISIS needs serious consideration to keep ISIS current and relevant for silviculture planning purposes.

Action: Stan will take the ISIS access issue to the FRBC Executive to seek funding to help licensees get needed software and ensure security. (Licensees with SPAR access already have the operating system software.)

Action: Guy will ask Dave Maitland about the provincial status of ISIS and report back to the committee. *(Guy discussed with Dave on September 8, 1999. Access by licensees is not currently being discussed, but Dave will bring it up as a topic at next conference call.)*

Licensees still need to submit planned treatments for the next 5 years (using their own system). Numbers should reflect stewardship requirements, not historical funding levels.

Sustainable Harvest Table
Review of Williams Lake TSA table format. The table is a total chance plan that covers all required treatments, not necessarily only those currently eligible for FRBC funding (eg. forest health).

SIBEC study won't be funded by SSFM (Strengthening Sustainable Forest Management) program, so has been added to SH (Sustainable Harvest).

Expected volume gains will be used from TISC or determined by the committee. The committee reviewed the TISC summary table of impacts associated with treatments (Table 4.1) and discussed the following:

- Base case assumptions for TSR2 are mandatory treatments to achieve anticipated volume yields.
- OAF1 could be reduced to at least 10% from 15% since numerous field visits show very little lost growing space due to mortality. Needs supporting data though to have any effect on TSR3.
- OGSI gain of 12% from TISC is a "paper increase" (anticipated gain with no actual treatment conducted) but is one of the highest increases. Needs local data to verify for increasing planning confidence, planned through SIBEC initiative and further confirmed via Growth Intercept surveys.
- Use FRBC allocation to the TSA's as proportions of total regional need of $500,000 for SIBEC. Quesnel $180,000, Williams Lake $220,000, 100 Mile $100,000
- Required forest health treatments are mandatory for ensuring anticipated yields and gains, which demonstrates their high priority for funding.
- Brushing impeded stands – 2500 ha
- Genetic gain should assume 70% of planted stock on backlog sites (mainly spruce) is genetically improved. Gain is 7% on 70% of the backlog planting and 2% on the other 30%.
- Juvenile spacing has averaged about 2500 ha/year for the TSA. Use 2000 ha/year for the RMP to reflect available area and other logistics.
- High amount of area available for fertilization – use 3000 ha/year at a priority 2.
- Incremental planting to improve stocking – 700 ha/year for first two years then 400 ha/year for next two years. Can plant large stock for about $1/tree with only one

manual brushing required at the most, which is more cost effective than planting smaller stock and brushing several times. Priority 2 or 3.
Action: Rob will confirm anticipated benefit with Mike by Sept. 10.

- Most roads and landings already stocked naturally so rehabilitation potential is minimal. Gain of 84 m^3/year. Low priority due to small gain at a relatively high cost
- Pruning – 100ha/year and priority 4 or 5.
- Forest health concerns includes monitoring of young stands. $30,000/year for the TSA.
  Note: Bark beetle management studies and operational trials are Priority 1 for MELP in the Quesnel TSA. This includes proactive means and application of enhanced forestry treatments to make stands less susceptible to potential infestation.
- Rehabilitation of fire-origin pine first needs ground surveys to stratify areas of treatment vs. no treatment. Surveys for 1,000 ha /year to cover Went Fire and other old burns.
- Mature forest – Bark beetles requires $50,000 per TSA for aerial overview surveys. Trap trees and bait – $100,000, $1,000,000 for single tree, $850,000 for ground surveys.
- Current fire and pest (includes TSL major's).
  Action: Mike will provide numbers.

- Additional licensee input for Quesnel TSA table.
  Action: Licensees e-mail to Jane at jperry@wlake.com or fax to 398-5318 by September 10.

Forest Renewal BC 2000/2001 Land-Based Allocations

- Hand-out from Stan.
- Approximate MYA allocation for Quesnel is $5.2 million, which is 36.79% of the $14,080,000 regional allocation for MYA's. That proportion will roughly apply to the three land-based strategic objectives.
- Allocations by Victoria with limited flexibility allowed.
- Stan would like all TSA's together in mid to late September to determine regional priorities for SH and EEV (Enhancing Environmental Values). (SSFM is already at the regional level.)
- Each TSA will need to determine licensee allocations and detailed work plans once the TSA allocation is determined.

Further Action

- Priority 1 treatments will be used to develop 2000/2001 plan with lower priorities included if possible. May need to make some trade-offs here.

Williams Lake TSA
Resource Management Plan

Sustainable Harvest

Meeting Summary
August 15, 1999, 9:00 am
Room 210 - 540 Borland Street, Williams Lake

In Attendance

Brian Chapman	Ministry of Environment, Lands and Parks
Stan Gripich	Forest Renewal BC
Kim Peel	Lignum Ltd
Bev Frittenberg	Chilcotin Forest District
Bev Atkins	UBC Research Forest
Cindy Gibson-Robertson	Williams Lake Forest District
Gerry Mooney	Horsefly Forest District
Art Lacourciere	Weldwood - Williams Lake Division
Guy Newsome	Cariboo Forest Region
Ray Leduc	Cariboo Forest Region
Tim Harding	Riverside Forest Products
Brian McNaughton	Woodlot Association

Absent:

Guy Burdikin	West Fraser Mills Ltd.

1. Introduction.

Guy Newsome introduced the topic of Resource Management Planning (RMP) for the FRBC sustainable Harvest Strategic Objective..

Cariboo Forest Region is ahead of other Regions in the province in planning for silviculture investments, through the work of the Timber Investment Strategy Committee (TISC). Forest Renewal will be providing funds for 2 years for development of Forest Level Strategic Silviculture Plans. The Cariboo Region, through TISC. has conducted forest level analysis on the impacts to Harvest levels (Short, Mid and Long term) from silviculture investments. The funds currently available will be used to provide similar types of analyses on Tree farm licenses (not included in the TISC analysis) and to further refine the TSA analysis.

RMP's will be based on addressing issues raised in the Timber Supply review process and forest level analysis.

TSR1 indicated a fall down in harvest levels (10% reduction per decade) for the next 5 decades before harvest levels assume a sustainable level. The main objective of the RMP for the Williams Lake TSA will be to outline the opportunities to mitigate the fall down through silviculture treatments and/or fill knowledge gaps to provide better information that may allow harvest levels to be maintained at current levels.

The RMP will build on the TISC analysis and provide an array of silviculture treatments. The RMP is a technical document that is being prepared through a consultative approach (Ministries, FRBC and MYA and Annual Agreement holders) and will include a prioritized list of activities. The MYA and Annual agreement holders prepare workplans that include projects based on the priority activities included in the RMP. The RMP includes both FRBC eligible and ineligible activities.

This group is not to focus only on enhanced forestry, all silviculture activities are to be considered. Priorities will be based on TSA level needs. The group must determine ways of achieving the TISC objectives. All available information should be considered.

The RMP is technical document that does not consider social objectives - investment planning (FRBC responsibility) considers social implications. Social implications are not used to adjust the RMP. FRBC can adjust the recommended list of investment activities to achieve social objectives.

District priorities will be shown in the RMP as technical information that can be used to guide the distribution of activities within the TSA.

A discussion about the objective of the RMP resulted in the formulation of the following objective statement:

The objective of the RMP is to present a program/plan/recommendations for improved timber production through silviculture treatments, site quality enhancements, forest health reclamation/rehabilitation of potentially productive land base and identification of knowledge gaps that can be addressed through silviculture studies, inventories and research.

The RMP framework document and Appendix 1 (Sustainable Harvest RMP guidelines) were reviewed to provide guidance as to how to proceed with the development of the RMP.

In order to identify the basic issues a summary of related documents is required to be included in the RMP.
ACTION ITEM: The following documents should be reviewed and issues related to timber supply for the Williams Lake TSA to be summarized as background information for the RMP

TISC Reports 1& 2
McNaughton report to CLMA
20 Year Timber Supply Analysis (STTAA)
Williams Lake TSA TSR1 AAC Rationale Document

CCLUP (90 day Implementation Process Final Report)
CCLUP Integration Report
The SH RMP development guidelines were reviewed, specifically pages 8-12.

Section 3.1 Basic Data
Information from the TSR2 data package will be used.

Section 3.2 Issues.
Key issues affecting timber supply are outlined in the STTAA document. Issues are Standing Timber Inventory, Green-up, adjacency and other cover constraints, visuals, VQO's and Habitat.

Section 3.3 Incremental Silviculture history.

Dave Maitland will be asked to query ISIS for 10 year averages for all incremental activities.

The discussion then turned to solutions to addressing to major issues; fall down effect (short term) and enhancement of timber supply (Long term)

Solutions to the Fall Down Effect

Partial Cutting

Commercial Thinning (growth benefit) 2500 ha/Year @70 M3/ha + fertilization (resulting in an additional 15m3/ha)
To achieve long term stand densities, PCT with and without fertilization is required.

Mature Stand partial harvest (removing a % of the volume to deal with adjacency issues. Estimated harvest level is 150M3/ha

Options Working Group to determine optimum levels of CT and PH to achieve objective (reduce fall down effect and maintenance of current harvest levels through short and mid term)

Problem Forest Types

1,400,000 ha in TSA @ $\leq$ SI 9.0
Potential harvest 50 m3/ha from 7,000 ha/yr (assuming 50% of PFTs will produce a crop over the rotation period
Requires inventory of PFTs to determine area potentially harvestable (if wait long enough), potentially treatable (brings new area into timber harvesting land base at higher productivity level) and untreatable (productivity too low to result in commercial crop)

Reduction of Rotation ages

Stand tending
All harvested areas put under managed stand densities.
Requires Stand Tending / density management on 10,000 ha/yr.
A 10 year reduction in rotation age results in 90,000 m3/year starting at the 5th decade.

Fertilization
Requires Fertilization of 2,000 ha/year
Results in 30,000 m3/year starting at the 5th decade

Reduction of green-up requirements

Requires Policy adjustments

Enhancing Timber Supply

SIBEC
Site Index adjustment can result in increasing long term harvest levels by up to 400,000 m3/year starting at the 9th decade.
Requires SIBEC studies and SI adjustment of 10,000 ha/year for 5 years

Genetic Improvement
5000 ha/year are currently planted. If all ha planted with genetically improved stock could improve long term harvest levels by 100,000 m3/year. For all FRBC funded projects, where available, genetically improved seed will be used.

Backlog NSR

No acceleration required. Negligible net benefit to acceleration. Approx. 7000 ha currently classified backlog NSR.

Highest priority is tending already planted backlog areas.

Requires Surveys, Site Preparation, Planting and Brushing.

Average costs for total treatments, approx. $3000/ha

Action Items
Districts to provide Guy Newsome with amount of Area in each category (next five years)

Problem Forest Type Rehab

Candidates for rehab - 300,000 ha estimate

Survey - 10,000 ha/yr.

Treatments 1,000 ha /yr. @ $1500/ha

Benefit: Additional 2,000 m3 harvestable volume

Additional Items listed but not discussed:

Reclamation of Lost sites (Ag leases reverting to the Crown)
    amount of landbase available is unknown.
Road and Landing Rehab
    Small treatment areas are very expensive to treat.
Stand Tending - Brushing, Spacing
    discussed above as a rotational benefit
Forest Fertilization
    same as spacing, considered a rotational benefit
Forest Health Enhancement and Maintenance
    Will need to be defined in conjunction with Forest Health staff
Site Occupancy- O.A.F. adjustments and Fill Planting
    Has a potential to increase the growing stock, reduction of OAF1 is a direct increase in harvestable volume. Initial surveys has found OAF1 to be more in the range of 3-5% rather than 10%. This equates to a 5-7% increase in volume. OAF1 surveys should be included in FG assessments.
Studies to Enhance Timber Supply
    Needed studies yet to be defined
Current Fire and Pest
    Amount of area and treatments required is yet to be defined by districts.
Enhanced Silviculture Prescriptions
    Regimes - potential to grow two forest crops on each site.
Rotation Ages based on product
    Minimum product objectives were not set. Objective of a larger piece size could have negative effects on AAC.
Reduced minimum Harvest Ages
    Dealt with as a reduced rotation age. Has potential to provide additional wood supply in the mid to long term.

Meeting Adjourned without setting date and time for next meeting. Individuals will be contacted in the near future to establish a follow-up meeting date.

Williams Lake TSA
Resource Management Plan

Sustainable Harvest

Meeting Summary
August 30, 1999, 9:00 am
Room 111, 640 Borland Street, Williams Lake

In Attendance

Guy Newsome	MOF, Cariboo region
Ray Leduc	MOF, Cariboo region
Stan Gripich	Forest Renewal BC
Troy Larden	MELP, Williams Lake
Clinton Webb	MELP, Chilcotin district/region
Bev Frittenburg	MOF, Chilcotin district
Dave Greenley	MOF, Horsefly district
Cindy Gibson-Robertson	MOF, Williams Lake district
Kim Peel	Lignum
Guy Burdikin	West Fraser
Art Lacourciere	Weldwood
Tim Harding	Riverside Forest Products
Jane Perry	Consultant (scribe)

Overview by Guy Newsome on the Resource Management Plan which has three components, one of which is Sustainable Harvest (SH). The objective is to prioritize FRBC investments although the RMP is comprehensive and will include non-FRBC funded activities also.

Review of July 15 minutes and key points. Need to develop list of priorities at this meeting. Distribution of 100 Mile House SH spreadsheet which could be used as a template for WL.

Clinton outlined MELP's desire for input to SH process: 1) Combining habitat enhancement with enhanced forestry activities for meeting SH objective. Important to identify treatments now since the per ha cost or the scale of the treatment may increase to accommodate habitat considerations. 2) To meet time constraints, reference for future consideration, outline future studies required and possibly terms of reference for them. Stan regards this as the next step, when the RMP is done.

RMP will be re-visited next Spring 2000 to revise where necessary. This process will be fairly broad for this version. Agreement that MELP input is required at this time.

Review of RMP objective from page 2 of July 15 minutes. Additionally for the WL TSA, 1) increase total available timber *and habitat supply* and 2) fill short-term timber supply shortfall.

There is a need for further operational planning after RMP to determine the feasibility of SH activities with respect to funding limits for each MYA. As well, some activities stem from others, such as fertilization of stands at optimum densities (spaced or planted). FRBC will be looking at equatibility among TSA's but needs to know the strategic objectives for each TSA. The RMP only focuses technically on necessary treatments to meet TSA specific strategic objectives; the investment planning process is a later step.

Discussion of equatibility among regions and in relation to regional unemployment. Stan added that the Cariboo region has traditionally received less FRBC $ than what it contributes *and* unemployment is currently at 14%.

Agreement: *The main priority for the WL TSA is to alleviate the short-term timber supply shortfall. The next priority is to improve long-term timber supply.*

Action: Guy will ask Dave Maitland for 10-year averages from ISIS for all incremental activities to add to the SH plan as a benchmark.

Solutions to the Falldown Effect (review from July 15 minutes)

Partial Cutting and Commercial Thinning

- Shown through TISC process as high priority. TISC showed that WL TSA needs 2500 ha/year of stands available for CT. Must identify attributes for candidate stands. Options working group addressing further through the winter and has identified 30,000 ha of potential CT stands.
- No CT $ from FRBC but still a beneficial treatment (revenue covers thinning costs).
- Falldown in WL TSA could potentially begin with TSR2 and continue for 90 years. The falldown is primarily caused by an imbalance of the age classes within the Williams Lake TSA. The falldown can be partially alleviated by utilizing a minimum or target piece size rotation rather than a fixed age based rotation. TISC analysis has showed that reducing rotation ages by 1 decade helps fill timber supply shortfall. Utilization of PFT's may also contribute to timber supply.
- Partial harvest meets adjacency requirements while still extracting volume (from mature age class 6 & 7 stands while CT is in younger stands and anticipates growth response from remaining stems). PH will be a proportion of the 2500 m^3/year required for CT.
- ***Action:*** CT will be part of the **studies** portion of the SH plan. Start with $100,000 to cover costs of studying the magnitude of the opportunity. Mapping using input stand criteria will make a significant start to locating candidate CT stands. TSR2 needs the data. Options working group found that this needed to be proven.

Juvenile Spacing

- Juvenile spacing ("pre-commercial thinning") helps meet stand structure objectives for future CT. Average historical levels of ~6000 ha/year of spacing in WL TSA. TISC showed no benefit from doubling or tripling area of annual spacing.
- Must consider ingress with planting densities in relation to later density.
- JS on stands with SI <8 is not biologically or economically beneficial within a manageable rotation.
- MELP concerned about spacing large areas for low expected growth gain. The typical situation is post-wildfire areas — can result in significant loss of habitat, reduced trapping value.
- Backlog spacing (>10,000 sph) considered as part of spacing pool (from 1982-87 before legal obligation to space to meet FG requirement) — this need stems from policy, not necessarily biological need. Licensee does the spacing with costs under Ministry Outstanding or Industry Outstanding, now eligible under FRBC enhanced forestry funding.
- Need follow-up from FRDA II "Guidelines for Maintaining Biodiversity During Juvenile Spacing" report for regional and more site-specific application. *(Guy has several copies if anyone is looking for one.)*

FRBC 2000/01 Land-Based Allocations

- Distributed and reviewed by Stan.
- Regional allocation of $16,080,000 with most in MYA's.
- Allocations are firm except for annual agreements (AA). Handout includes approximate MYA allocations and calculated %'s by TSA.
- **Social objectives are secondary to renewal treatments.** Social priorities are for areas of high unemployment, especially after period of activity with an available, trained workforce needing further employment.
- 100 Mile TSA table distributed needs cost/ha (Column C) and measurable gain (Column E) included for all TSA tables (request by Stan).

Problem Forest Types

- Defined as SI <9. Some PFT's handled under bark beetle licenses.
- Options working group defining harvestable/NSR/other.
- MELP has concerns about PFT management in relation to biodiversity conservation strategy, such as seral stage balance. Low sites very unproductive — what are the benefits of treating?
- From July 15 minutes, only 50% of PFT's believed to have potential for producing a harvestable crop over a rotation period. Results in potential 342,000 m^3/year from PFT's that can be harvested.
- TSR2 addresses PFT's differently by 'absorbing' if SI >7 ("marginally operable").
- Study of PFT harvest opportunity is more of a component for Strengthening Sustainable Forest Management strategic objective than for SH.

Reduction of Rotation Ages

- Accessing timber sooner will help offset short-term timber shortfalls.
- 5000 sph will be used as the upper limit for managed stand density. (ie. do not space if density < 5000 sph).
- ***Action:*** Conduct **studies** on effects of area spaced per year on AAC. (eg. reduction from 6000 ha/year as historical value). What is the threshold level for area spaced/year to benefit timber supply? Need FSSIM modeling done to answer this. Cost = $25,000 (estimate) and will be included as a study under Stand Tending Activities.
- Use total gain in m^3 from juvenile spacing over 5 years instead of TISC number of 90,000 m^3/year from July 15 meeting to estimate increase in volume from JS.
- Fertilization (not combined with CT) — If 2000 ha/year fertilized, 5th decade starts additional 30,000 m^3/year.

TISC Summary Table

From the WL TSA TISC report by Timberline (Tables 6.1 and 6.2)

Scenarios to address:

- Short Term Gain to reduce immediate potential falldown (Strategic Objective #1)
- Long Term Gain to increase total volume in the long term (Strategic Objective #2)

Table is on following page.

Action: Guy and Jane will expand table to include each of 5 years for expenditures and input meeting decisions (last page July 15, Aug. 30) into the table for committee review. Add all listed potential treatments even if very low priority due to high cost and/or low anticipated benefit.

Working Targets

Action: Working targets, according to the RMP framework and based on ha/year, will be suggested by Guy and Jane for review and comment by committee members.

Agriculture Leases Reverting to the Crown

Action: Guy will contact BC Assets and Lands about status of agricultural leases and their potential to contribute to the timber supply after rehabilitation.

Williams Lake TSA
Resource Management Plan

Strengthening Sustainable Forest Management

Meeting Summary
June 29, 1999, 9:00 am
Room 210, 540 Borland Street, Williams Lake

1. Committee members introduced themselves. Committee members are:

Name	Representing	Phone #	e-mail
Ray Leduc	MOF Region	398-4431	rleduc@gems7.gov.bc.ca
Eric Johansen	MOF Region	398-4545	ejohansen@gems9.gov.bc.ca
Harry Jennings	MOF Region	398-4432	hjennings@gems9.gov.bc.ca
Stan Gripich	Forest Renewal	398-4899	sgripich@gems8.gov.bc.ca
Charles Von Hahn	Slocan (Quesnel TSA)	992-5581	cvonhahn@slocan.quesnelbc.com
Al Hunter	West Fraser (TFL52)	992-0888	ahunt@westfrasertimber.ca..com
Brian Chapman	MELP	398-4550	bchapman@williams.env.gov.bc.ca
Mircea Rau	UBC - Williams Lake	392-2207	rau@ubc.interchg.ca
Karen Campbell	Weldwood (Williams Lake TSA)	392-1375	karen_campbell@weldwood.com
Al Hicks	Weldwood (100 Mile House TSA)	395-8200	al_hicks@weldwood.com
Peter Andrews	Weldwood (TFL5)		peter_andrews@weldwood.com
Dave Conly	Lignum(IFPA)	392-3371	dconly@lignum.com

Dave Conly, Peter Andrews and Harry Jennings were absent.

Also attending was Roman Navratil -MELP. Roman was attending to be familiarized with the RMP process, but will not be participating in the development of the RMP

2. Stan Gripich Reviewed the Forest Renewal BC investment principles.

3. Ray Leduc led a review of the Resource Planning Framework Document (Draft 3 dated June 23, 1999) and the Guidelines for Resource Management Planning for Strengthening Sustainable Forest Management (Draft dated June 18, 1999 Draft)

4. Ray Leduc led a discussion around identification of tasks and timelines. The Attached process and schedule was agreed to for completion of the RMP

5. Next meeting
   Date: July 28, 1999.
   Time: 9:00 a.m. - 4:00 p.m.
   Location;

Williams Lake TSA
Resource Management Plan

Strengthening Sustainable Forest Management

Meeting Summary
July 13, 1999, 9:00 am
Room 218, 640 Borland Street, Williams Lake

In attendance

Name	Representing	Phone #
Ray Leduc	MOF Region	398-4431
Harry Jennings	MOF Region	398-4432
Heather Knezevich	MOF Region	398-4429
Doug Krogel	MELP	398-4550
Rick Wheeler	Riverside Forest Products	392-4121

Harry Jennings presented a list of activities, based on his knowledge of Cariboo-Chilcotin Land Use plan implementation requirements as a basis for discussion. The following list of activities will be proposed to the committee for discussion and ranking on July 28.

1. CCLUP Biodiversity Targets
2. CCLUP Mule Deer Strategy/Objectives/Targets
3. CCLUP Riparian Targets
4. CCLUP Visual Targets
5. CCLUP Fisheries/Watershed Targets/Objectives/Strategies
6. CCLUP Caribou Strategy/Objectives/Targets
7. CCLUP Furbearer Targets and Identified Wildlife
8. CCLUP Grazing Targets
9. CCLUP Tourism, Back country, Recreation Targets
10. CCLUP Wildcraft Targets
11. CCLUP Target Achievement

Williams Lake TSA
Resource Management Plan

Strengthening Sustainable Forest Management

Meeting Summary
July 19, 1999, 9:00 am
Room 218, 640 Borland Street, Williams Lake

In attendance

Name	Representing	Phone #
Ray Leduc	MOF Region	398-4431
Eric Johansen	MOF Region	398-4945
Brian Chapman	MOF Region	398-4429
Tracy Earle	Lignum Ltd	392-3371
Frank Miklas	Chilcotin Forest District	394-4736
Mike Cleaver	100 Mile House Forest District	395-7800

Eric Johansen led the discussion of TSR activities. As a result of the discussion the following list of activities will be presented to the committee for discussion and ranking on July 28, 1999.

1. TRIM2
2. Stream Classification
3. RMA Classification
4. Losses of Harvestable volumes to insect pests (Annual aerial overview survey)
5. Forest Cover update for Roads
6. SIBEC study
7. Stand Structure Mapping and TEM for MDWR
8. Basal Area Calculations for MDWR
9. Old and Mature plus Old attribute research, inventory and mapping for MDWR
10. Growth and Yield Monitoring
11. Prognosis Calibration
12. RMA/WTP overlap inventory
13. OGMA/WTP/FEN overlap inventory
14. Ownership Update
15. WTP attributes related to MDWR
16. WTP attributes contribution to old and Mature Plus Old
17. OAF studies
18. Remeasurement of Growth and Yield PSPS in Quesnel TSA
19. Suspended sedimet monitoring in the Horsefly River
20. Assessment of ESA Classification (Soils) VS TSM

21. Inventory of Root Rots
22. Caribou Habitat prescription monitoring and assessment
23. Localization of Taper Equations
24. Maintenance of Growth and Yield PSPSs
25. Survey methodology for MDWR un-evenaged stands
26. Tree Ingress on Roads Survey
27. Encroachment of timber on Open Range
28. Determination of unsalvaged losses
29. Landscape inventories
30. Lakes Classification
31. Reinventory (Phase 1 Vegetation Inventory)
32. Inventory of Coarse Woody Debris (CWD)
33. Prescription monitoring and assessment for CWD
34. Localization of OGSI adjustment factors
35. Pilot Study to determine need for Net Volume Adjustment Factors
36. Terrain Stability Mapping
37. Establishment of Growth and Yield PSPs in Natural Stands
38. Vegetation Inventory for 100 Mile House Forest District (phase 2)
39. Snow accumulation studies in high elevation forests
40. Vegetation Inventory for Quesnel Forest District (phase 2)
41. Watershed assessments

Meeting adjourned 3:00 p.m.

Williams Lake TSA
Resource Management Plan

Strengthening Sustainable Forest Management

Meeting Summary
July 28, 1999, 9:00 am
Room 111, 640 Borland Street, Williams Lake

In attendance

Name	Representing	Phone #
Ray Leduc	MOF Region	398-4431
Eric Johansen	MOF Region	398-4545
Harry Jennings	MOF Region	398-4432
Brian Chapman	MELP	398-4550
Al Hicks	Weldwood (100 Mile House TSA)	395-8200
Mike Lloyd	Horsefly Forest District	620-3200

Harry Jennings Lead the discussion on the Land use Planning activities.
The order of priority for the land use planning activities as agreed to by the group is as follows:

1. CCLUP Biodiversity Targets
2. CCLUP Mule Deer Strategy/Objectives/Targets
3. CCLUP Riparian Targets
4. CCLUP Visual Targets
5. CCLUP Fisheries/Watershed Targets/Objectives/Strategies
6. CCLUP Caribou Strategy/Objectives/Targets
7. CCLUP Furbearer Targets and Identified Wildlife
8. CCLUP Grazing Targets
9. CCLUP Water Quality and Quantity Information
10. CCLUP Tourism, Back country, Recreation Targets
11. CCLUP Wildcraft Targets
12. CCLUP Target Achievement

Traditional Use and Archaeological Studies activities were not discussed as they did not relate to Either the Land use Planning and TSR activity discussions.

Eric Johansen then led a discussion of TSR activities as they wer listed in the spreadsheet. The order of priority (Project Ranking) for TSR activities were agreed to as follows:

1. TRIM2

2. Stream Classification
3. RMA Classification
4. Losses of Harvestable volumes to insect pests (Annual aerial overview survey)
5. Forest Cover update for Roads
6. SIBEC study
7. Stand Structure Mapping and TEM for MDWR
8. Basal Area Calculations for MDWR
9. Old and Mature plus Old attribute research, inventory and mapping for MDWR
10. Growth and Yield Monitoring
11. Prognosis Calibration
12. RMA/WTP overlap inventory
13. OGMA/WTP/FEN overlap inventory
14. Ownership Update
15. WTP attributes related to MDWR
16. WTP attributes contribution to old and Mature Plus Old
17. OAF studies
18. Remeasurement of Growth and Yield PSPS in Quesnel TSA
19. Suspended sedimet monitoring in the Horsefly River
20. Assessment of ESA Classification (Soils) VS TSM
21. Inventory of Root Rots
22. Caribou Habitat prescription monitoring and assessment
23. Localization of Taper Equations
24. Maintenance of Growth and Yield PSPSs
25. Survey methodology for MDWR un-evenaged stands
26. Tree Ingress on Roads Survey
27. Encroachment of timber on Open Range
28. Determination of unsalvaged losses
29. Landscape inventories
30. Lakes Classification
31. Reinventory (Phase 1 Vegetation Inventory)
32. Inventory of Coarse Woody Debris (CWD)
33. Prescription monitoring and assessment for CWD
34. Localization of OGSI adjustment factors
35. Pilot Study to determine need for Net Volume Adjustment Factors
36. Terrain Stability Mapping
37. Establishment of Growth and Yield PSPs in Natural Stands
38. Vegetation Inventory for 100 Mile House Forest District (phase 2)
39. Snow accumulation studies in high elevation forests
40. Vegetation Inventory for Quesnel Forest District (phase 2)
41. Watershed assessments

The spreadsheet and project descriptions will be sent out for review and comment.

The next meeting will be September 2, to finalize the ranking and descriptions.

Williams Lake TSA
Resource Management Plan

Strengthening Sustainable Forest Management

Meeting Summary
Sept. 2, 1999, 9:00 am
Room 111, 640 Borland Street, Williams Lake

In attendance

Name	Representing
Ray Leduc	MoF Cariboo Region
Eric Johansen	MoF Cariboo Region
Harry Jennings	MoF Cariboo Region
Lyle Resh	MoF Cariboo Region
Guy Newsome	MoF Cariboo Region
Brian Chapman	MELP
Rodger Stewart	MELP
Clinton Webb	MELP
Tracy Earle	Lignum Ltd
Al Hunter	West Fraser Mills Ltd (Quesnel Division)
Rick Wheeler	Riverside Forest Product
Karen Campbell	Weldwood (Williams Lake)
Al Hicks	Weldwood (100 Mile House)

1. Regional Knowledge gaps were briefly discussed and will be amended as follows:

items g and h of priority item #1 are to be combined into CCLUP Wildlife Objectives/Targets.

2. Land Use Planning

Harry Jennings Lead the discussion on the Land use Planning activities.
It was recognized that most CCLUP related information gaps and needs will also provide information that can be used in future TSRs. In order to avoid duplication of effort, linkages and duplication were identified. This resulted in combining activities wherever possible. The importance of activities to either the TSR or Land use planning process are still recognized but a zero cost factor is applied and the linkages are identified to show that the information for this item will be collected elsewhere.

The order of priority for the land use planning activities as agreed to by the group is as follows:

1. CCLUP Biodiversity Targets

Will now include update on seral status a priority item within this activity.

In order to avoid duplication of effort this activity is expected to also provide information for TSR RMA/WTP overlaps ,OGMA/WTP/FEN overlaps and contributions of WTP to Old and Mature Plus Old (in MDWR)

2. CCLUP Mule Deer Strategy/Objectives/Targets
In order to avoid duplication in TSR and Land Use Planning activities this activity will also provide information for TSR for MDWR Stand Structure mapping, Basal Area Calculations, Old and mature plus old attribute research , WTP attributes retained in MDWR

3. CCLUP Riparian Targets
This activity is expanded to now include Lakes Classification, Reconnaissance level Fish and Fish Habitat Inventory and intensive (species specific) Fish and Fish Habitat inventory. In order to avoid duplication in TSR and Land Use Planning activities this activity will also provide information for TSR on Stream Classification, RMA (RRZ/RMZ) classification, RMA/WTP overlaps, OGMA/WTP/FEN overlaps

4. CCLUP Visual Targets
In order to avoid duplication in TSR and Land Use Planning activities this activity will also provide information for TSR by targeting landscape Inventories of the highest priority viewscapes.

5. CCLUP Fisheries/Watershed Targets/Objectives/Strategies
Watershed assessments previously identified as TSR priorities will now be addressed under this activity.

6. CCLUP Caribou Strategy/Objectives/Targets
Will now include activities previously identified as a TSR activity.

7. CCLUP Wildlife Objectives/Targets
This activity is intended to collect information on furbearers, Mule Deer, Grizzly Bear, Bighorn Sheep, Moose and identified species and habitats at risk.

8. Integration of CCLUP Targets in Sub-Regional Planning.
New Item. It was recognized that the collection of information alone will not suffice. Analysis of data and GIS analysis is a necessary step in ensuring that the CCLUP targets are integrated into sub-regional planning. This is a high priority item that must follow the data collection phase.

9. CCLUP Water Quality and Quantity Information
Two hydrological inventory projects identified as MoF TSR items are to added to the list of MELP water quality projects (Sediment monitoring of Horsefly River and Snow accumulations in high elevation harvest areas)

10 CCLUP Grazing Targets
Timber encroachment in open range is moved from TSR activities to this Land Use Planning activity.

11. CCLUP Tourism, Back country, Recreation Targets
12. CCLUP Wildcraft Targets
13. CCLUP Target Achievement

Project ranking of Traditional Use and Archaeological Studies activities were not discussed as they did not relate to Either the Land use Planning and TSR activity discussions. Stan Gripich informed the group that Forest Renewal is committed to providing $500,000 for TUS for the TNG under a previous commitment. This will have to come off of the total that will be available for SSFM.

Eric Johansen then led a discussion of TSR activities as they were listed in the spreadsheet. The changes are as follows

Original Ranking	Item	Change	New Ranking
1	TRIM2	No Change	1
2	Stream Classification	$ are zeroed. Item will remain on the list as high priority. Will be covered under CCLUP riparian	2
3	RMA Classification	$ are zeroed. Item will remain on the list as high priority. Will be covered under CCLUP riparian	3
4	Losses of Harvestable volumes to insect pests (Annual aerial overview survey)	Will now include #28 (non recoverable losses) and the total funds needed increased to $170,000	4
5	Forest Cover update for Roads	Will now include # 14 (ownership update) Should cover all FC1 And FIP updates. Total funds to be increased to $300,000	6
6	SIBEC Study	Will be funded under Sustainable Harvest Strategic Objective	8
7	Stand Structure Mapping and TEM for MDWR	$ are zeroed. Item will remain on the list as high priority. Will be covered under CCLUP Mule Deer Strategies/Targets/Objectives	9
8	Basal Area Calculations for MDWR	$ are zeroed. Item will remain on the list as high priority. Will be covered under CCLUP Mule Deer Strategies/Targets/Objectives	10
Original	Item	Change	New

Ranking			Ranking
9	Old and Mature plus Old attribute research, inventory and mapping for MDWR	$ are zeroed. Item will remain on the list as high priority. Will be covered under CCLUP Mule Deer Strategies/Targets/Objectives and CCLUP Biodiversity	11
10	Growth and Yield Monitoring	No Change	12
11	Prognosis Calibration	Reduced to $50,000	13
12	RMA/WTP overlap inventory	$ are zeroed. Item will remain on the list as high priority. Will be covered under CCLUP riparian and CCLUP Biodiversity	14
13	OGMA/WTP/FEN overlap inventory	$ are zeroed. Item will remain on the list as high priority. Will be covered under CCLUP riparian and CCLUP Biodiversity	15
14	Ownership Update	Delete. Becomes part of New # 6.	
15	Attributes retained in MDWR	$ are zeroed. Item will remain on the list as high priority. Will be covered under CCLUP Mule Deer	16
16	WTP contribution to Old and Mature plus Old	$ are zeroed. Item will remain on the list as high priority. Will be covered under CCLUP Biodiversity	17
17	Localization of OAF's	No change	18
18	Remeasurement of PSPs	No change	6
19	Sediment sampling in Horsefly River	Deleted. Will be covered in CCLUP Water Quality and Quantity.	
20	Assessment of ESA's Vs TSM	Funding reduced to $50,000	19
21	Root Rot Inventories	No Change	20
22	Caribou Habitat. Prescription Monitoring	Deleted. Include in CCLUP Caribou Targets	
23	Localization of Taper equations	No change	21
24	Maintenance of G&Y PSP's	No Change	22
25	MDWR Stand Structure survey Methodology	Part of CCLUP Mule Deer	23
Original	Item	Change	New

Ranking			Ranking
26	Ingress of Old Roads and widths of new roads	No change	24
27	Open Range encroachment	Deleted. Moved CCLUP grazing targets	
28	Unsalvaged Losses	Delete. Move to #4 Loss of harvestable volume	
29	Impact of visuals on operable land base	Delete. Move CCLUP Visual Targets	
30	Lakes Classification	Delete. Move CCLUP Riparian targets	
31	Reinventory	add reclasssification of Age classes 7,8,9 for CCLUP Biodiversity needs	25
32	Coarse woody Debris (CWD) recruitment	no change. Linked to VRI	33
33	CWD impact on utilization standards	Delete. Not relevant	
34	Localization of OGSI	no change	34
35	NVAF pilot studies	funding reduced to $50,000	26
36	Operability mapping	no change	27
37	Establishment of PSPs (MoF)	no Change	28
38	Vegetation Resource Inventory (VRI) (100 Mile House District)	Quesnel District and additional samples for Williams Lake TSA added. Funding increased to 240,000	
40	Snow accumulations in high elevation Harvest	Delete. Moved into CCLUP Water Quality and Quantity	
41	VRI Quesnel District	delete. Added to #38 above	31
42	Watershed assessments	Delete. Moved to CCLUP Fisheries/Watershed Targets	
43	G&Y establishment (UBC research Forest) Gavin Lake	New	29
44	G&Y establishment (UBC research Forest) Knife Creek	New	30

ACTION ITEMS:
MELP to revise Activity summaries and funding requirements and send to Ray Leduc by September 17.

Meeting adjourned at 3:30 p.m.

Enhancing Environmental Values

Meeting Summary
July 15, 1999, 9:00 am

In attendance: Brian Chapman, Bruce McFarlane, Ray Jungar, Ken Gilbert, Jamie Moe, Peter Beggs, and Muhammed Sabur.

Discussion and action items:

1. Composition of technical committee. It was agreed that the following persons may be included in the technical committee:

   a. Brian Chapman - Ministry of Environment
   b. Bruce Hillabee - DFO*
   c. Ken Gilbert - FRBC
   d. Jamie Moe - Ministry of Forests, Horsefly Forest District
   e. Ray Jungaro - Ministry of Forests, Quesnel Forest District
   f. Peter Baggs - Ministry of Forests, 100 Mile House Forest District
   g. Muhammed Sabur - Ministry of Forests, Cariboo Forest Region, Williams Lake.

* Members need to be contacted for their willingness to participate.

2. It was agreed that bucket map would be used as base map. The base map would be constructed by combining maps created for the forest districts in the region. The land area units or the buckets would be identified by bucket numbers. The base map would also contain major watershed names.

3. It was agreed that buckets (watersheds) that were most likely to be eligible (i.e. within category I&II) for FRBC funding would be considered.

4. Come up with rationale for

   - selection of target species
   - ranking of buckets

5. Sabur was to contact Williams Lake Forest District and Chilcotin Forest District regarding their input, if available, for developing rationale for the selection of the key buckets within the districts.

6. Forward species selection criteria to DFO for comments.

7. Sabur and Brian were to come up with ranking criteria and forward them to the districts for their comments if any.

Enhancing Environmental Values

Meeting Summary
July 29, 1999, 9:00 am

In attendance: Don Lawrence (DFO), and Brian Chapman (MELP)

Main discussions:

Brian discussed key buckets with Don Lawrence and requested DFO to rank the key buckets. Don agreed to rank the key buckets and had his ranking list to Brian by next day.

Enhancing Environmental Values

Quesnel Forest District
Meeting Summary
September 9, 1999, 9:00 am

In attendance: Stan Gripich (FRBC), Ken Gilbert (FRBC), Brian Chapman (MELP), Muhammed Sabur (MoF), Ray Jungaroo (MoF), Bruce McFarlane (MoF), Gerry Powell (Weldwood), and Al Hunter (West Fraser Mills).

Main discussion:

The attendees were presented the priority bucket list. They reviewed the list and commented on the prioritised buckets.

Al hunter provided a list of their high priority buckets.

Gerry Powell needed to research their priorities to provide their list. He said he would provide that later.

Ken and Stan (FRBC) suggested that another column to the bucket list table be added to indicate the implementing partners. Also suggested that the report should contain a cost estimate table for the key buckets.

Enhancing Environmental Values

100 Mile House Forest District
Meeting Summary
September 10, 1999, 9:00 am

In attendance: Pual Hutchinson (Aisnworth), Roger Peckham (MELP), Ken Blom (MoF), Peter Baggs (MoF), Muhammed Sabur (MoF), Brian Chapman (MELP), Kim Peel (Lignum), and Ken Gilbert (FRBC).

Main discussion:

The attendees were presented the high priority bucket list for 100 Mile House TSA. Attendees reviewed the list and provided comments regarding the list.

Paul (Ainsworth) needed to discuss with his colleagues in office. After discussion he would send their priority buckets with rationale by next Tuesday (Sep 14, 1999).

Kim Peel (Lignum) did not have any concern regarding the bucket list MELP and MoF prepared.

No representative from Weldwood was present.

Enhancing Environmental Values

Williams Lake TSA
Meeting Summary
September 13, 1999, 9:00 am

In attendance: Brian Chapman (MELP), Stan Grpich (FRBC), Ken Gilbert (FRBC), Rick Wheele (Riverside Forest Products), Jamie Moe (MoF), Ron (Lignum), Muhammed Sabur (MoF), Karen (Weldwood), and Bert (West Chilcotin Forest Products)

Main discussions:

Attendees reviewed the key buckets priority list. The attendees, specially licensee representatives were requested by Muhammed Sabur (MoF) and Brian Chapman (MELP) if they had any comments regarding the priority lists. Licensee representatives debriefed the attendees on their transitional buckets in the region. Licensees also indicated their preferences in undertaking WRP projects in some buckets.

On Sellers Creek issues agreement was not reached between MoF and Weldwood.

Ryane (Lignum) needed to discuss the bucket priorities with his colleagues in office and would send a list of buckets with comments.

Brian would phone Lorie (West Chilcotin Forest Products) to identify their priorities.

Rick Wheeler (Riverside Forest Products) would send a list of buckets of their priorities.

Stan suggested that he might call a general meeting involving all the licensees in the region by the last week of September.

Others:

Stan mentioned that he preferred 10% of the high priority bucket be in Williams Lake TSA for equitable distribution FRBC funds.

Two year window for getting out of the Low and Medium priority buckets.

Two standards agreement would be required for FRBC projects. For instream work MELP would look after and for upslope work MoF would look after.